THE POLITICAL ECONOMY OF REGIONAL HYDROPOWER INVESTMENTS IN AFRICA

A Dissertation submitted to the Faculty of Humanities, University of Witwatersrand (Johannesburg), in partial fulfilment of the requirements for the degree of Doctor of Philosophy in International Relations

BY

EYITA-OKON, EKEMINIABASI

STUDENT NUMBER: 308421

<u>Supervisor</u>

PROFESSOR ROD C. ALENCE

September, 2020

Declaration

I declare that this dissertation is my own unaided work. It is submitted for the degree of Doctor of Philosophy in International Relations at the Faculty of Humanities, University of the Witwatersrand, Johannesburg, South Africa. It has not, to the best of my knowledge, been submitted before for any other degree or examination in any other university. Parts of this thesis was put out for publication in January 2020 in a journal article titled "Credible Commitment and Large Dams in Africa" for the South African Institute of International Affairs.

Ekeminiabasi Eyita-Okon

September 2020

Dedication

To God, who makes all things possible in his time. To my fallen heroes – Unyimeabasi Eyita, Utibeabasi Eyita and Professor Edet D. Okon – your memories live on! To my parents, Mr and Mrs Kingsley Eyita, I am grateful for all the sacrifices made for me. To my brother, Oduduobong K. Eyita – you are everything I could ever ask for. To my husband, Mr Uno Okon, you are simply the best. To my sons, you are constant reminders that I can do all things. To my family in South Africa, thank you for your love and support.

Acknowledgements

I am grateful to God for life and his blessings.

I am thankful to Professor Rod Alence for his support throughout this journey.

I am grateful to the Global Change Institute (Wits University) for funding my study.

To family and friends: Shilela Nkadimeng, Zwonaka Netshifulani, Thandeka Ukpong, Faith Nfii and Kingsley Orievulu, thank you.

I am grateful to my colleagues at the Department of International Relations for your words of encouragements during quick office visits and corridor chats.

To my husband, Mr Uno Okon, thank you for your love and support – you and the boys (Edet D. Okon and Chris U. Okon) made the journey worthwhile.

Table of Contents

List of Tables

List of Figures

Abstract

Africa has abundant potential to generate hydroelectric power. Yet with an uneven record of building large dams, much of this potential remains untapped. This thesis addresses the question of why some large dam projects have been built and others have not. The problem of credible commitment by host governments to prospective investors is central to the explanation. The problem is that while large dam projects require large investments over lengthy periods, after construction is complete host governments may face strong temptations to renege on their agreements with investors – in an environment that lacks a supranational authority to enforce agreements. Anticipating this, investors will be reluctant to invest, and many potentially mutually beneficial hydroelectric dams will go unbuilt. The empirical part of the thesis begins with a statistical analysis of hydroelectric potential and realised capacity in Africa compared to other regions. This is followed by comparative case studies of the Cahora Bassa dam in Mozambique, completed in 1974, and the Grand Inga dam in the Democratic Republic of Congo (DRC), still unbuilt despite plans stretching back decades. I show that the credible commitment problem in the Cahora Bassa case was overcome through strategic interaction between the Portuguese colonial host government and the South African apartheid government, which was the main investor and the principal consumer of the power generated. The credible commitment problem in the Grand Inga case has been much more intractable due to the larger numbers of investors and consuming countries involved, and importantly to political risk within the DRC. The thesis contributes to the understanding of how Africa can better exploit its hydroelectric potential, in an era of increasing emphasis on renewable energy sources.

Keywords: hydropower investments, credible commitment, Cahora Bassa Dam, Grand Inga Dam, Africa, political economy.

Abbreviations

ACS	Actividades de Construccion y Servicios
ADEPI	Agence pour le Développement et la Promotion d'Inga (Inga Development Authority)
AfDB	African Development Bank
ADF	African Development Fund
ANC	African National Congress
AU	African Union
BC	Basse Chute
CODESI	Commission pour le Développment du Site d'Inga
DBSA	Development Bank of Southern Africa
DFI	Development Finance Institution
DIRCO	Department of International Relations and Co-operation
DRC	Democratic Republic of Congo
EIA	Environmental Impact Assessment
EIB	European Investment Bank
EDM.EP	Electricidade de Moçambique Empresa Publica
ESKOM	Electricity Supply Commission
EU	European Union
EXIM BANK	Export-Import Bank
FRELIMO	Frente de Libertação de Moçambique
FSF	Fragile States Facility
GHG	Green House Gas
GoDRC	Government of the Democratic Republic of Congo
GoRM	Government of the Republic of Mozambique

GoRP	Government of the Republic of Portugal
HCB	Hidroélectrica de Cahora Bassa
HTP	Hidro-Technica Portuguesa
HVAC	High Voltage Alternating Current
HVDC	High Voltage Direct Current
ICOLD	International Commission on Large Dams
IDA	International Development Association
IDC	Industrial Development Corporation
IFIs	International Financial Institutions
IPP	Independent Power Producers
kWh	Kilo Watts hours
MDGs	Millennium Development Goals
MFPZ	Missão do Fomento e Povoamento do Zambesi
MEHR	Ministry of Energy and Hydraulic ResourcesD
MIREME	Ministerio dos Recursos Minerais e Energia
MoU	Memorandum of Understanding
MW	Mega Watts
OAU	Organisation for African Unity
PASEL	Inga Site Development and Electricity Access Support Project
PCG	Portuguese Colonial Government
PPA	Power Purchase Agreement
PPP	Public Private Partnership
REN	Redes Energéticas Nacionais
RENAMO	Resistência Nacional Moçambiana
RoFR	Rights of first Refusal Off-Take
SADC	Southern African Development Community

SAPP	Southern African Power Pool
SDG	Sustainable Development Goal
SNEL	Société Nationale d'Électricité
SPV	Special Purpose Vehicle
SYDELCO	Syndicat pour le Développement de l'électrification du Bas-Congo
TA	Technical Assistance
TAP	TransAfrica Project
TWH	Terra watts hours
USAID	United States Agency for International Development
UN	United Nations
WBG	World Bank Group
WDPA	World Database of Protected Area
WESTCOR	Western Corridor Power Company
ZAMCO	Zambeze Consorcio Hidroelectrica Lda
ZESA	Zimbabwe Electricity Supply Authority

CHAPTER ONE: INTRODUCTION

1. Introduction

Africa has an abundance of untapped hydropower potential, yet there is a shortfall in electricity generation and access in the region. The World Bank posits that Africa has over 400 gigawatts of undeveloped hydropower potential, an estimated 12 per cent of the global potential, yet only 3 per cent has been exploited for electricity production in the region (Appleyard, 2014). While technical feasibility problems partly explain this gap, complex political economy issues associated with large dam investments in Africa remains the biggest challenge. Most times, this complexity stems from the absence of the prerequisite for attracting investments such as a politically stable environment, the presence of strong domestic institutions of accountability and the lack of political will and commitment. Apart from this, host governments with large hydropower potential are required to engage in transboundary planning and cooperation with several actors including but not limited to investors (firms, states, institutions), engineering companies, neighbouring countries and off-taker states, local elites and the general populace. The varying interests of these actors add a layer of complexity to the existing political economy dynamics. These have the tendency to subvert cooperation efforts and outcomes, thereby prolonging the exploitation of untapped hydropower potential in Africa. This is the core problem this thesis explores – the challenges of attracting investments for large dam development in Africa.

The Inga III as the first phase of the Grand Inga hydroelectric dam (hereon referred to as "Grand Inga") is one of the major projects proposed to harness the vast unexploited hydropower potential in Africa. Talks and negotiations for the Grand Inga project date back to the colonial era. Despite being a priority project for successive governments in the Democratic Republic of Congo (DRC, formerly Zaire) over several decades, the Grand Inga dam has yet to be built. A similar large-scale hydropower project in Mozambique, the Cahora Bassa dam, was completed in 1974 and continues to generate and supply electricity to the South African market. A brief overview of existing large dams in Africa indicates that they were built during the colonial era spanning the early years of independence. The shortfall in electricity supply and access in Africa is a strong incentive for host governments in the region to exploit their hydropower potential yet this has not been the case. This thesis believes that one of the key explanations

for the uneven patterns of large dam development lies in the challenges of attracting investments.

The hydropower potential in Africa results from its geographical placement. The African continent is a vast plateau sitting slightly above bounded waters such as the Mediterranean Sea. The plateau itself is characterised by major rivers and basins. It has one of the largest combined waterways in the world concentrated in four major rivers: the Congo, Zambezi, Niger and the Nile. These waterways sit at a reasonably high elevation because of the placement of the African continent. As a result, water from these rivers and basins descend into the coastal strip thereby creating the potential for hydroelectric power generation. The bulk of this potential is concentrated in Central Africa, particularly the Inga fall in the Congo Basin. Only an estimated 10 per cent of this potential has been exploited by the smaller Inga I and II projects, and the bulk of the potential requires the much larger Grand Inga projects (Lempérière & de Savignac, 2013; Food and Agriculture Organization, 2008).

Though Africa has ample potential to expand the supply of hydroelectric power, households and firms in the region are among the most under-served by electricity in the world. As an important driver of human and economic development, the lack of electricity therefore undermines individual welfare and level of economic productivity in a country. Studies show that the percentage of households in Africa with access to electricity is half the average for the rest of the world, and the average European consumes ten times more electricity than the average African (Food and Agriculture Organization 2008). A World Bank report on electrification efforts in sub-Saharan Africa found that even though some countries in the continent have made progress in increasing electricity access, there is still a substantial difference between production and potential (World Bank 2019). Thus, by exploiting the untapped potential for large-scale dams, the African continent can improve access to clean and affordable energy for both firms and households in accordance with the seventh sustainable development goal (SDG).

But large-scale dam development is not without challenges. A project of this nature requires huge upfront capital investment and constant interaction between various stakeholders, over a lengthy period (usually years). During this period, owing to uncertainty about future events,

governments tend to adjust their preferences and strategic behaviour according to their self-interests. Sometimes, this creates an enabling environment for non-cooperative behaviour to thrive where the temptation to act opportunistically becomes attractive to the government especially in the absence of a regulatory and/or punishment mechanism. This cooperation challenge is embodied in the problem of credible commitment – how to bind actors to an agreement across time and space.

In this study, I frame the challenge of securing investments for large-scale hydroelectric dams as a credible commitment problem for two main reasons. Firstly, large dam investments require collaborative efforts with a wide variety of actors over a lengthy period. To ensure a successful outcome, the host government's commitment to the terms of the agreement needs to be credible, binding throughout the duration of the project. Secondly, the politics and economics of hydropower projects have paradoxical implications that can be potentially resolved if the host government remains credible in commitment. Investors are often attracted to such large-scale projects because of its economic feasibility – economic benefits such as profits are higher than the costs (expenditure). But the politics surrounding large dam tends to dissuade investors. Electricity is politically salient in nature thereby enabling the penchant for opportunistic behaviour by the host governments. For instance, the government can use electricity supply as a bargaining tool to secure re-election at the expense of the investor. In addition to this, the absence of strong domestic institutions of accountability further complicates this problem. In such instances, the onus falls on the host government to signal to investors its willingness to commit to the terms of the agreement reached to incentivise investors into 'risking' their investments else investment is withheld and large dams remain unbuilt. The problem of credible commitment has been used to study a variety of cooperation issues but I adopt the framework to examine large dam development cooperation in Africa.

To this end, this study asks three main questions to gain insight into the challenges of investment cooperation for large dam development. The first question concerns why credible commitment problems exist in large dam investment cooperation. Secondly, how can such cooperative initiatives overcome credible commitment problems for optimal collective outcomes such as dam construction and operation, and energy poverty alleviation? Finally, using cross-case thematic analysis what factors facilitate or hinder credible commitment by the

host government in such cooperative initiatives? The third question has both academic and policy implications. The answers to these questions would be critical in explaining the current status quo characterised by uneven patterns of dam development in Africa.

In his book *The Strategy of Conflict* (1980, originally published 1960), Schelling defines commitment as being willing to be bound to a given course of action or inaction. Thus credible commitment requires a combination of commitment and persuasive communication (Schelling, 1980 & 2006). Commitment is indicative of the willingness to follow through and do what one has promised or threatened while persuasive communication requires making the other actor(s) believe that the promise or threat will be executed. Applying this logic to conflict behaviour (defined in terms of deterrence), Schelling argues that deterrence is a bargaining process concerned with influencing the choices the other party or adversary will make. Therefore, deterrence from a credible commitment perspective is about conditioning the behaviour of the adversary into choosing strategies that would prevent or minimise the destructive impact of the pending war (Schelling, 1980). This logic applies to large dam investment cooperation in Africa.

To secure investments, the host government needs to influence the expectations and choices of potential investors. Where long-term investments are concerned in Africa, investors are often wary of investing because of high levels of political risks. Such risks emerge as a result of a change in political heads, opportunistic behaviour by the host government or a sporadic outbreak of conflict; all of which undermine returns on investments. This is further complicated by the lack of strong domestic institutions of accountability in most potential host countries in Africa. As a result, investors choose to not invest in such projects. But investments for large dam development, like deterrence, are a bargaining process. The onus falls on the host government to influence the perception and decision of the investor regarding its behaviour when cooperation is established. The host government has to persuade the investor that it is willing to be bound by the terms of the investment agreement reached through choosing strategies that tend towards the agreed set goal. Thus, credible commitment is one of the key determinants of investment levels in large dam development.

By studying the political economy of hydropower investments through the lens of the credible commitment problem, I make two main arguments. First, co-dependence and compatibility in the interests of the host government and the key investors are crucial to overcoming the challenges of credible commitment. Compatibility here suggests strong alignment in the interests of all actors towards a collective goal. Drawing on Oye's definition of harmony, in this study, alignment in interest refers to the absence of gains from defection (1986, 7). When all actors consciously note that defection does not add any value, their respective interests are aligned towards achieving the collective goal. This is a prerequisite for success in any cooperative arrangement. It is important to note that harmony or alignment in interest does not suggest homogeneity or unvarying interests between the actors. Instead, it suggests a predisposition for all actors in a cooperative arrangement to choose strategies and subsequently behave in ways that result in a successful outcome. When preferences and strategies differ, it creates a breeding ground for self-interest with guile (O. E. Williamson 1991) and the subsequent breakdown in cooperation.

Secondly, multiple actors with fragmented interests complicate credible commitment problems. The higher the number of actors in dam investment cooperation, the more difficult credible commitment becomes for the host government. Every actor in a large dam investment cooperation has an interest in the project. To protect their interests from any possible acts of opportunism, these actors tend to have certain terms and conditions under which they will invest in a project. The host government is expected to be compliant with these terms that vary from investor to investor. However, it makes it difficult to spot defection thus it becomes an attractive option to the host government. This is because of the higher the number of participating actors (N-player), the higher the transaction and information cost to both the host government and the investors (Axelrod and Keohane 1986). However, when there is some level of co-dependence between the actors that is, one actor's action is dependent on the other and vice versa, defection becomes glaring and measures can be taken to address them. These arguments lend credence to the existence of credibility problems in large dam investment cooperation.

An existing body of literature has examined the challenges of credible commitment in cooperation. Although a variety of recommendations have been proposed on how to overcome

credible commitment problems in the literature, I categorise the mainstream arguments into three themes namely interests, iteration, and institutions. Where large dam investment cooperation is concerned, the interest of the host government and the respective investors are crucial determinants of the success or failure of such initiatives. The more aligned their interests are, the more likely cooperation will yield successful outcomes. Cooperation fuels the penchant for actors to act opportunistically in the absence of a credible enforcer, thereby inhibiting successful collaboration. A breakdown in cooperation emerges as opportunism causes fear of exploitation because partners pursue their self-interest with guile (Williamson, 1991). Opportunism is the 'single-minded' and active pursuit of self-interest while neglecting the interests of other participating actors in the cooperative arrangement (Wong, Tjosvold and Yu 2005). Such behaviour causes panic among participating parties and can lead to all actors acting accordingly – that is, in their self-interest. Hence, the understanding of the respective interests associated with the cooperating parties is crucial in assessing cooperation outcomes.

Iteration is another strategy as recommended by the literature to tackle the challenges of credible commitment (Mailath and Samuelson 2006; Pearce 1992). The principle of iteration entails the repeated interaction between cooperating parties in any social setting; it serves to check-and-balance behaviour. The thrust of the argument is that as actors repeatedly exchange with each other, they build a reputation over time. As a result, a credible reputation becomes the dominant strategy for actors who may or may not seek assistance (aid, loans, and emergency relief funds) from potential investors at a later stage. The reputation of an actor in any social interaction defines the behaviour of the others. If one actor is cooperative, others are likely to follow suit. Inversely, if an actor behaves opportunistically, others within the arrangement are likely to act accordingly. Hence, a repeated interaction is deemed necessary to inhibit uncooperative behaviour and subsequently, suboptimal outcomes especially in the absence of a supra-national authority.

Most collaborative efforts occur in the absence of a third party or supra-national authority to act as a credible enforcer. This is what scholars like Kenneth Oye (1986) term cooperation under anarchy. Anarchy is defined as the absence of a world government to act as a law enforcer by monitoring the behaviour of actors while incentivising good behaviour and punishing defection. The more complex the dynamics of cooperation becomes the more likely it is that

formal institutions will be necessary. Institutions are considered a pivotal mechanism to ensure credible commitment from actors in any social interaction (Nee and Ingram 1998). It is important to note that social interaction here refers to the reciprocal action that actors such as governments, individuals, non-state actors, and others, undertake to understand and grapple with the ever-changing dynamics of the world and its subsequent challenges. Institutions are defined as the formal rules, informal norms and the enforcement characteristics of both (North 1990). They provide the guiding principles through which actors can interact to achieve a successful outcome. They aim to incentivise cooperation, monitor compliance, and punish defection. However, it is important to note that the presence of institutions does not substitute for interests and iteration. Instead, institutions provide the frameworks within which repeated interaction between self-interested actors can successfully collaborate.

Using the Cahora Bassa Dam and the Inga project as case studies, I test the core assumptions made in the literature on how to overcome credible commitment challenges. On the issue of alignment in the interest of the cooperating actors, I argue that the security dependence between the apartheid government in South Africa and the Portuguese colonial government in Mozambique made it unlikely for the colonial government to defect on its commitments to the apartheid government. Each party faced a regime security dilemma that became inherent to energy security cooperation. The Cahora Bassa dam was built with the main purpose of serving the South African market with electricity output for which the latter would pay a flat rate below the electricity market price. The agreement between both governments and the Portuguese colonial government's credible commitment would be tested as the wave of decolonisation coincided with the construction of the Cahora Bassa dam. The continued interaction between both parties contributed immensely to the Portuguese colonial administration's commitment especially since the relations extended beyond electricity cooperation into core security issues. Later on, following independence, the Mozambique Liberation Front (FRELIMO) government would encounter a modified version of security dependence on the apartheid government in an attempt to quell the rebellion of the Mozambique National Resistance (RENAMO).

In the Inga case, the former President Joseph Kabila of the DRC had an interest in developing the Inga project for his benefit. For one, it would represent the flagship of his otherwise authoritarian regime (Warner, et al. 2019). Similarly, the World Bank had a development

interest in the Grand Inga project however this was undermined by the need for institutional restructuring to enable transparency and accountability in the development process of the Grand Inga project. This restructuring would see the formation of the ring-fenced institution – Agency for the Promotion of the Inga (ADPI) – independent of the office of the Presidency. This implies that Kabila had no agency to make decisions regarding the procedures for the development of the Grand Inga. Although Kabila had initially agreed to the terms of the agreement as evidenced by the signing of the financing agreement with the World Bank in 2014, by 2016 he had reneged on his commitment. While the World Bank cited transparency and accountability issues as the reason for excluding the office of the Presidency, Kabila's regime arguably viewed such a strategy as a threat to its regime stability.

The research method adopted in this study is a mixed-method strategy that combines descriptive statistics and comparative case study method. The purpose of descriptive statistics is to show the vastness of the hydropower potential in Africa in comparison to other regions of the world. Also, it depicts the ratio of hydropower production to the region's potential and the importance of developing this potential. The use of a comparative case study would enable an in-depth assessment of credible commitment challenges in large dam development in Africa. The case study method is a qualitative research method that "investigates a contemporary phenomenon within its real-life context; when the boundaries between phenomenon and context are not evident; and in which multiple sources of evidence are used" (Yin 1984, 23). Thus, an overview of the case studies shows that the Cahora Bassa dam had a successful outcome: the project was constructed, commissioned, and operational as opposed to the Grand Inga case. Although the latter was revived by Kabila's regime, the dynamics around the narrative of the project changed towards the end of his regime and post-Kabila. A case study method allows for a thorough assessment of this narrative and its implication for credible commitment in large dam development.

Furthermore, I explored a range of policy and scholarly documents and conducted interviews to get insight from experts in the field. Expert knowledge is pivotal to unpacking the credible commitment challenges of large dam cooperation. These experts have either experienced or deeply studied the given phenomenon in the respective field of inquiry. Their contributions usually constitute a systematic and, where necessary, chronological order of events including

their perception and analysis of the said event. However, several criticisms on the use of expert knowledge have emerged citing issues of distrust and bias (among others) as the reason. While these arguments are valid, expert knowledge makes valuable contributions to the field of international relations and development (Milliken 1999). Hence, the researcher can address the weakness of this method by identifying and using information or representative of the issue studied.

Thus, I conducted interviews with senior officials in Mozambique to gain insight into the political economy of the Cahora Bassa dam including but not limited to the actors, their respective interests, the changing dynamics of their relationship and the implications on the construction and operation of the dam. In South Africa, I interviewed five senior officials who were willing to be participants in my study from Eskom, Trans-Africa Project (TAP) and the Development Bank of Southern Africa (DBSA). A few senior officials from the DRC also participated in my study and telephonic interview with a senior official from the European Investment Bank (EIB). In addition to these interviews, academic resources, policy documents and reliable news reports were consulted to understand the narrative surrounding both case studies. Important documents such as the supply contract between South Africa and colonial Mozambique were sourced from the Department of International Relations (DIRCO), Arquivo Histórico de Moçambique (Historical Archive of Mozambique) at the Eduardo Mondlane University in Mozambique, and the University of the Witwatersrand, Johannesburg, the World Bank, and the African Development Bank (AfDB).

This research topic cuts across both academic and policy spheres, especially where energy infrastructure development is concerned. As an implication for academia, this research contributes to the robust body of literature on cooperation and credible commitment in large infrastructure development. It offers an alternative perspective to the traditional cost-benefit approach to cooperation problems in sunk cost industry by drawing on credible commitment. The policy implication of this research is that it empowers investors and host governments alike with more knowledge of the factors that influence an actor's behaviour and provides a better understanding of the context within which such cooperative arrangements must occur. This, therefore, undermines the 'quick fix' strategy most external actors employ to address the deep-seated issues characterising a dysfunctional investment environment in the host country.

An example of a quick fix strategy is the setting up of an emergency institutional framework as an extension of, or superior to, the existing constitutional mechanisms. I acknowledge that lending institutions or investors are not responsible for addressing the domestic problems facing most host countries however they must be cognizant of the problems and engage in negotiations with that understanding.

The chapter outline for the rest of this study is as follows. The next chapter provides a graphical representation of the importance of hydropower in Africa's energy narrative. Using descriptive statistics, it visualises the energy gaps vis-à-vis the available potential. The graphs show that there is a vast amount of untapped potential on the African continent, enough to meet growing demands for renewable electricity in the region.

Chapter three discusses the problem of credible commitment as the analytical framework for this study. It assesses the literature on cooperation and energy development to find that there is a consensus on the role of institutions in facilitating credible commitment, particularly in electricity cooperation.

Chapter four discusses the Cahora Bassa case study in two parts. Part one provides a historical overview of the dam with a sharp focus on the political economy (and security) issues surrounding the dam development. Part two assesses the credible commitment challenges peculiar to the different epochs in the narrative. It also examines the key actors in the project and their characteristics to foster an understanding of how the characteristics, number of actors and their corresponding interests can undermine or facilitate credible commitment in large dam investment cooperation.

Chapter five discusses the Grand Inga case in two parts. Part one outlines the history of Inga dam development from Mobutu to Joseph Kabila. The second part of this chapter explores the credible commitment problems surrounding the dam project including the number of actors, their interests and the implications on Inga dam cooperation.

Chapter six discusses the findings of this research project vis-à-vis the research questions outlined in chapter one using cross-case thematic analysis.

Chapter seven provides a synopsis of the research and its findings while making recommendations on areas for further research.

CHAPTER TWO: AFRICA'S HYDROPOWER POTENTIAL

Africa's hydropower potential can be linked to its geographical location. It is the second-largest continent after Asia and is bounded by great waters. The region is bounded by the Atlantic Ocean, the Mediterranean Sea, the Red Sea and the Indian Ocean (Mabongunje & Gardiner, 2019). The continent is considered a vast plateau that rises steeply from narrow coastal strips. The surface of the plateau is higher in the southeast and tilts downward to the northeast (Mabongunje & Gardiner, 2019). The plateau is characterised by large rivers and basins such as the Congo, the Niger, the Nile and the Zambezi. In comparison to Europe and North America, only 10 per cent of its land area lies above sea level. The river basins of the Nile, the Volta, the Zambezi and the Congo empty into the sea. As a result, water pours downwards from a height above ground level. It is this waterfall when potentially captured that can be used to generate hydroelectricity (Bohannan and Curtin 1988).

Hydroelectricity or hydropower is generated by capturing energy from a mass of water (flow) falling down a height (head) using a water wheel or turbine to turn magnets inside a generator that create electrical current (Egré and Milewski 2002; Førsund 2015, 13-14). The infrastructure needs to capture falling water for energy production is referred to as hydropower dams or plants. These plants come in different sizes and are purpose dependent. For instance, while some are dedicated to irrigation or electricity generation, others are multipurpose, serving more than one function. Often, the sites where hydropower dams are developed are far from the end-user. As a result, the electric current generated can be distributed to potential end-users through power or transmission lines. Given geographical and geological considerations, the African continent is better suited than others for large hydro dam development as a renewable energy source. Although some countries have made substantial efforts to exploit its natural water endowment for electricity generation, there is still much-untapped potential in Africa.

This chapter aims to show that Africa has untapped potential yet only a fraction has been exploited for electricity generation purposes. This argument lends credence to the need for increased investments in large dam development in Africa. I use descriptive statistics to emphasise the gaps and benefits of exploiting the available hydropower potential. To support this argument, firstly, I show that there is a huge gap between Africa's exploitable hydropower

potential hereon referred to as 'exploitable potential' and its actual hydroelectric generation in comparison to other regions of the world. I replicate this analysis in the top ten-hydropower countries in Africa to show the gap between exploitable potential and production. Secondly, I assess the capacity of the exploitable potential, when translated to electricity production, to meet the growing demand for electricity across the regions of the world and in Africa. It emphasises the need to capitalise on the potential to meet the growing energy demand.

Finally, I show that there are spillover benefits to developing exploitable potential into hydroelectricity. That is, there are countries in Africa with a potential surplus of electricity to export to other countries in the region. This would expand the percentage of renewable energy production and consumption in Africa's energy mix. Potentially, this could lead to more openness in the trade of electricity. The term openness to trade is conventionally defined according to the neo-liberal principle of free trade where barriers to trade are limited or non-existent (Ulasan 2012). For this study, openness to trade is measured as the surplus electricity generated by a host country after domestic demand has been met. This necessitates the need for trade with immediate neighbouring countries or beyond the sub-region, to meet the buyer's respective domestic demand for electricity. Accordingly, openness to trade is calculated by adding total imports and total exports of electricity, the sum of which is divided by total production.

The chapter begins with a discussion on hydropower potential; it clarifies the choice of terminology. Following this, an acknowledgement of the cost versus benefit debates regarding large dam development. I draw on arguments made by proponents and opponents of large dam development. While there are various measures for hydropower potential, in this study I use exploitable potential as opposed to gross theoretical hydropower energy potential. With the use of simple bar plots, I justify why exploitable potential is better suited for this study. Thereafter, comparisons across the regions of the world and in Africa in terms of their respective potential versus actual hydroelectric production are provided. A similar assessment is provided with a focus on the regions' potential and electricity demand. Finally, the associated benefits of a spillover effect are depicted through graphical representation and discussed.

2.1. Concept clarification and debates on hydropower

Hydropower potential refers to the prospective benefits that can be harnessed from the mass of water (flow) moving down a certain height. This flow of water can generate various benefits if captured and used purposefully. One of such benefits is irrigation dams where the water is captured and used to irrigate agricultural land. Another benefit and the focal point of this study is hydroelectricity generation. The literature makes a distinction between hydropower energy potential and hydropower potential. The former refers to water flow that can potentially be used for energy generation. It depicts the different levels of energy production potential (International Renewable Energy Agency 2014). The latter on the other hand alludes to the potential physical size of the plant that would enable energy generation. For instance, hydropower potential can be pico, micro, mini, small, and large hydropower plants (Hoes, et al. 2017). For this study, the focus will be on large-scale hydropower dams.

The former is further sub-categorised into five mainstream types (International Renewable Energy Agency 2014). Gross theoretical potential takes into consideration every available water source. It represents the maximum amount of energy that can be potentially derived from these water sources. Unlike gross potential, geographical potential takes into account only water sources that can be used to develop renewable energy with consideration for the physical terrains of the resource site. The technical potential extends beyond the consideration of physical terrain to include consideration for the practicality of infrastructure instalment. Economic potential considers the portion of a terrain that is bankable and likely to yield high returns financially as well as socio-economic impact (International Renewable Energy Agency 2014; Hoes, et al. 2017). Finally, exploitable potential is the portion of economic potential that can be harnessed after environmental considerations have been made (Hoes, et al. 2017; Eurelectric 1997; Pokhrel, Oki and Kanae 2008). For this study, exploitable hydropower energy potential will be used.

Since the subject matter of this study incorporates both *hydropower energy potential* and *hydropower potential*, I use the term 'large dams' to refer to large-scale hydropower energy potential. This term alludes to both the physical size of the dam in focus, large dams, and the exploitable nature of the potential. Where necessary, I will specifically allude to 'exploitable potential' or 'gross theoretical potential'. The International Commission on Large Dams

(ICOLD) defines large dams as having a height of 15 meters and above. If a dam between 10 and 15 meters high has a crest length over 500 meters, a spillway discharge over 2000 cubic meters, or a reservoir volume of more than one to three million cubic meters, these are also considered as large dams (International Commission on Large Dams 2011) (Oud and Muir 1997, 19). The definition of a large dam has expanded to include having an installed capacity of more than a thousand megawatts. My definition of 'large-scale' is based on the ICOLD's definition but extended to include dams large enough that its electric output exceeds domestic demand – meaning that it is built with the expectation that a substantial portion of its output will be exported.

Proponents of hydropower emphasise its advantages vis-à-vis other energy sources like combustible waste and/or fossil fuels. Hydropower is said to have low energy production cost considering that the power plants have a long lifespan; low operation and maintenance costs; low greenhouse gas (GHG) emissions; the potential for other uses including irrigation and regulation of river flows both during flood season and low flow periods (World Commission on Dams 2000; Sovacool and Walter 2019). Opponents of large hydroelectric dams refer to their implications across socio-economic, political, environmental and ecological spheres (Gürbüz, 2006; Eurelectric, 1997). They undermine the construction and operation of large dams citing that the cost for development can be invested in micro or small hydropower projects. Others see hydro-politics of large dams as creating a breeding ground for corruption and patrimonialism among political actors (Nguh 2016; Butterworth and de la Harpe 2009). Other arguments highlight the socio-economic implications of large dams vis-à-vis the displacement of peoples from ancestral lands is relatively high (Isaacman and Isaacman 2013).

Also, in large dam narratives, environmental issues continually gain traction and prominence. The argument is that the construction and maintenance of (large) dams can be a greenhouse gas emissions-intensive process with an adverse effect on the environment. They note that reservoirs contain a large volume of water and dissolved biomass – creating a breeding ground for methane; and the rise and fall of the water level in the reservoir potentially cause flooding (Fearnside 2004, 8; Gagnon and Vate 1997; Rangeley 1990). This impacts the vegetation and arability of the land surrounding hydropower dams. Other issues they raise concern deforestation where the clearing of arable land and cutting down trees are done to enable dam

construction and installation of transmission lines. Also, they argue that large dams cause changes in hydrology and water quality, and the use of huge amounts of electricity for aluminium smelting as opposed to being transmitted for use within the household (Sovacool and Walter 2019). Irrespective, opponents to large dams, although acknowledging the benefits of hydropower and its minimal carbon footprint in comparison to fossil fuels, emphasise that it is not encompassing. That is, the argument is baseless when countries with tropical climates are considered – their reservoir emissions are relatively high. (Sovacool and Walter 2019).

Without detracting from the magnitude of challenges advanced by opponents of large dams, I argue that careful, coordinated planning and implementation can potentially address most of the respective issues. For instance, cognisance of these issues emphasises the need to prioritise environmental impact assessment studies where dam development is considered. Irrespective, I acknowledge that these debates also play a substantial role in large dam investment decision-making. When potential investors are wary of the costs rather than the benefits of large dams, they are less likely to invest in project development and vice versa. Nonetheless, hydropower remains a topical issue in Africa's energy and development discourse. It represents the major source of renewable energy in the region and globally in terms of installed capacity and global investment flows (Sovacool and Walter 2019). It is predicted to play an increasingly pivotal role in supplying electricity in low-income countries in Africa and Asia over the next three decades (Lumbroso, et al. 2014). Studies show that Africa's electricity generation would be ten times higher by 2065 (Pappis, et al. 2019).

Some large-scale hydropower dams already exist on the African continent yet there is potential for more. Dams such as the Aswan dam in Egypt, Askombo/Volta dam in Ghana, Kainji dam in Nigeria, Cahora Bassa in Mozambique and the Kariba dam in Zambia/Zimbabwe together constitute a large portion of the generation mix in their respective sub-regions. For example, the Cahora Bassa dam output is produced in Mozambique for exportation to South Africa and Zimbabwe. Prospective dam initiatives yet to be conceived and completed include the Grand Inga scheme seeking to harness the water of the Inga Fall for electricity generation and the Grand Ethiopian Renaissance Dam harnessing the water resources of the Nile River. Given that Africa is naturally endowed with water resources and there is a shortfall in clean energy production, it emphasizes the importance of hydroelectricity in addressing the energy

challenges (availability, affordability, reliability, accessibility, renewability and sustainability) in Africa.

2.2. An empirical assessment of hydropower potential (continental- and country-level)

The rest of this chapter is dedicated to showing that there is an abundance of exploitable potential in Africa, which can be harnessed for hydroelectricity production. It serves to consolidate the argument for more investments in large dam development in the region. This would not only reduce dependence by households on combustible wastes but increase access to electricity for those without. *Premièrement,* it is important to distinguish between gross theoretical and exploitable potential as the latter encompasses a more accurate and sustainable (concerning sustainable development discourse) estimate of hydropower energy potential across the regions of the world.

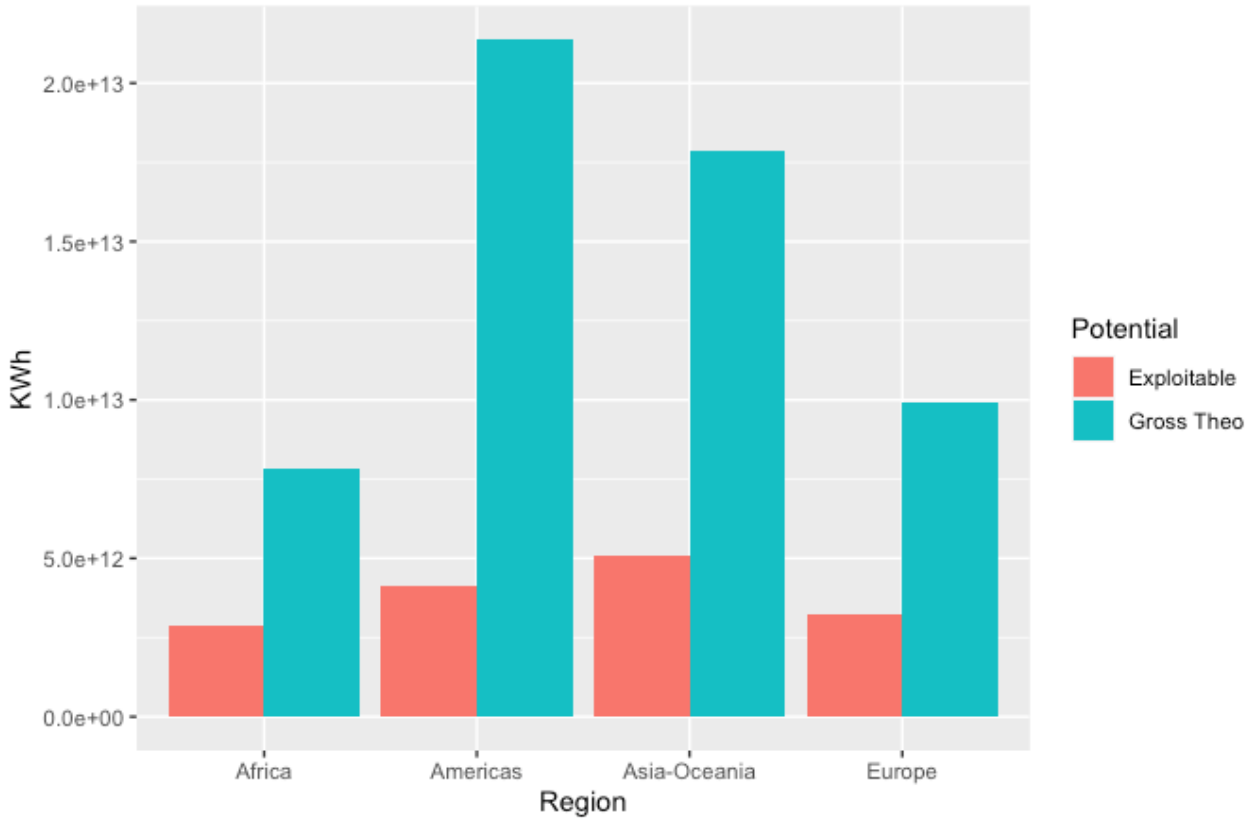

Figure 1: Gross theoretical versus exploitable potential

Data source: Pokhrel et al (2008) and Zhou et al. (2015)

The graph above shows a comparison between two types of potentials namely exploitable and gross theoretical potential. Gross theoretical hydropower potential[1] is the energy that is "potentially available when all-natural runoff in a country is harnessed down to the sea level (to the borderline of the country) without any energy loss" (Pokhrel, Oki, & Kanae, 2008). The exploitable potential data is defined as the resource sites that can be developed for hydropower generation with consideration for environmental and other special restrictions Zhou et al.'s (2015) study. The orange and green bars depict exploitable and gross theoretical potential, respectively.

The graph shows that Africa has the least exploitable and gross theoretical potential in comparison to the other continents. However, it is important to note that only twenty-six African countries are featured in the above graph. The stark difference between the types of potential is intrinsic to their respective definitions. While gross theoretical potential considers all waterways irrespective of whether they can be harnessed for hydropower generation while exploitable potential considers only waterways than can sustainably be used for electricity generation. Hence, the latter provides a more realistic representation of the available hydropower potential than can be exploited to generate hydroelectricity in the respective countries and regions of the world. Having justified the choice to use Zhou et al.'s exploitable potential as the more accurate representation of hydropower potential globally, it is important to deduce how much of this potential has been exploited for hydropower production in the various countries and regions of the globe.

The graph below compares the total actual hydropower production and exploitable potential. The former represents data for 'total hydro production'. It was gotten from the United Nations

[1] The gross theoretical potential data was gotten from Pokhrel et al. (2008) study and Method I was chosen for this analysis. Two methods were used to deduce how much hydropower potential is available in the respective measures; these methods were termed "METHOD I" and "METHOD II". Method I captures the energy potential that could be generated within a particular grid cell from the discharge that could be generated from the cell until it finally flows down to the sea, no matter which path it takes. This method is deemed accurate enough to calculate the energy potential on a global or continental scale but not applicable for local scale hydropower potential calculation. Method II uses the flow direction map to calculate the accumulated flow along the river channel with respect to the neighbouring grid cell in the flow direction. It considers the flow accumulation and termination of flow in some endorheic basins (Nichols, 2007).[1] This makes the method more suitable to study hydropower potential on a local scale (Pokhrel, Oki, & Kanae, 2008).

database. Data for the year 2016 was used; it had more complete information than those for 2017 and 2018, respectively. The data for exploitable potential was based on Zhou et al.'s (2015) list of 'top 100 hydropower countries' in the world. The categorization of the regions/continents was based on this list (Zhou et al. 2015). This implies that not all countries that are part of the respective continents were featured; the list guided which countries were included in the assessment. These countries were grouped into four continents namely: Africa, Americas, Asia-Oceania, and Europe.[2] In this study, the different parts of the American continents were grouped as one region called the "Americas"; I combined Asia and Oceania considering the latter only comprised of four countries; Antarctica was left out of the analysis because it is governed internationally through the Antarctic Treaty System signed in 1959 by twelve countries that belong to other continents (Secretariat of the Antarctic Treaty 2011). Seven countries were excluded from the analyses as a result of incomplete data.[3] It is important to note that exploitable potential was manipulated to achieve the results below. In the graph below, 'Exploitable pot' is a sum of Zhou et al.'s exploitable potential and the UN's actual hydro production data. This calculation was done to include the exploited potential (used for actual hydropower production) to the untapped exploitable potential (yet to be used for hydropower production). The sum of the equation shows the gross available and exploitable potential in the respective regions.

[2] The top 100 hydropower potential countries constituted the following: there were twenty-six African countries (Angola, Burundi, Cameroon, Central Africa Republic, Congo Democratic Republic, Congo Republic, Egypt, Equatorial Guinea, Ethiopia, Gabon, Ghana, Kenya, Lesotho, Liberia, Madagascar, Malawi, Morocco, Mozambique, Namibia, Nigeria, Somalia, South Africa, Sudan, Tanzania, Uganda, and Zambia); there were eighteen countries in the Americas (Argentina, Bolivia, Brazil, Canada, Chile, Colombia, Costa Rica, Ecuador, French Guiana, Guatemala, Guyana, Honduras, Mexico, Nicaragua, Paraguay, Peru, United States and Venezuela); there were twenty-eight Asian countries: Afghanistan, Armenia, Azerbaijan, Bhutan, China, Georgia, India, Indonesia, Iran, Japan, Kazakhstan, Kyrgyzstan, Laos, Malaysia, Myanmar, Mongolia, Nepal, North Korea, Pakistan, Philippines, South Korea, Taiwan, Tajikistan, Thailand, Turkey, Turkmenistan, Uzbekistan, and Vietnam; there were twenty-three European countries: Albania, Austria, Bosnia, Bulgaria, Croatia, Czech Republic, France, Finland, Germany, Hungary, Iceland, Italy, Macedonia, Norway, Portugal, Romania, Russia, Slovenia, Spain, Sweden, Switzerland, Ukraine, and United Kingdom; and there were four Oceanic countries: Australia, Fiji, New Zealand, and Papua New Guinea.

[3] The excluded countries include Somalia (Africa); Guyana (Americas); Laos, Mongolia, Taiwan, Turkmenistan (Asia-Oceania); and Yugoslavia (Europe).

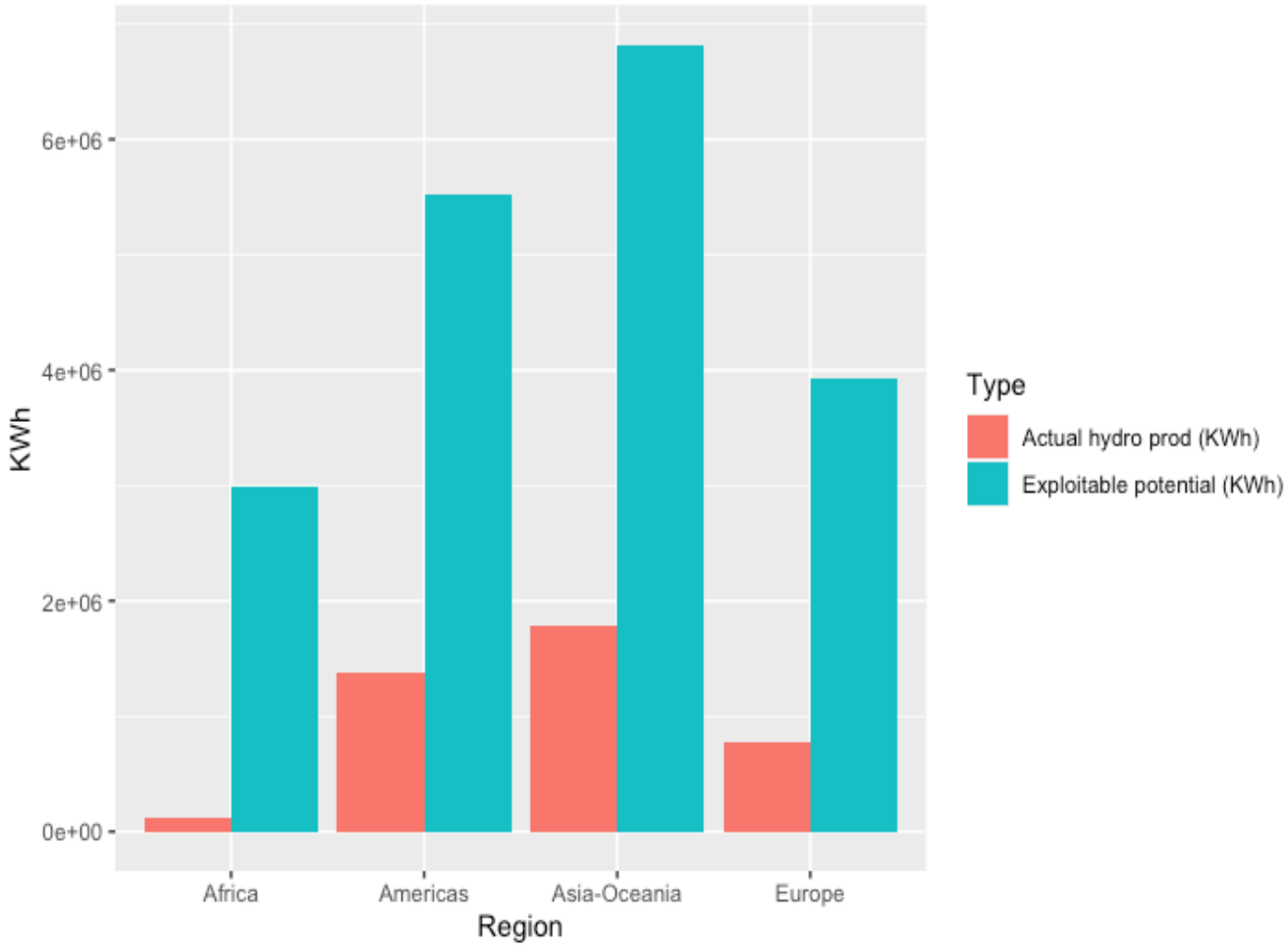

Figure 2: Exploitable potential and hydropower production across regions of the world
Data source: United Nations Statistics Division (2019) and Zhou et al. (2015)

The graph above shows the available exploitable potential across the various regions and how much of it has been exploited for electricity generation. Asia-Oceania has the highest untapped exploitable potential followed closely by the Americas, Europe and Africa. In terms of Actual hydropower production, Asia-Oceanic takes the lead with close to 2 million kWh of electricity produced. It is followed closely by the Americas at slightly above one million kilowatt-hours of electricity production. Europe and Africa rank the least with the former only generating under one million kilowatt-hour and Africa, in the thousands. The cause for concern is the disparity between production and potential for Africa. While other regions of the world have made substantial efforts to develop their hydropower potential Africa still lags. Yet, the exploitation of these water resources can have a substantial impact on the challenges of access

to electricity and affordability. This further consolidates the argument for increased investments in dam development in Africa.

Considering the focus of this thesis is on Africa, the same statistical analysis is replicated using country-level data. The graph below depicts the top 10 countries in Africa based on exploitable hydropower potential, in accordance with the top 100-hydropower potential countries list (Zhou et al. 2015).

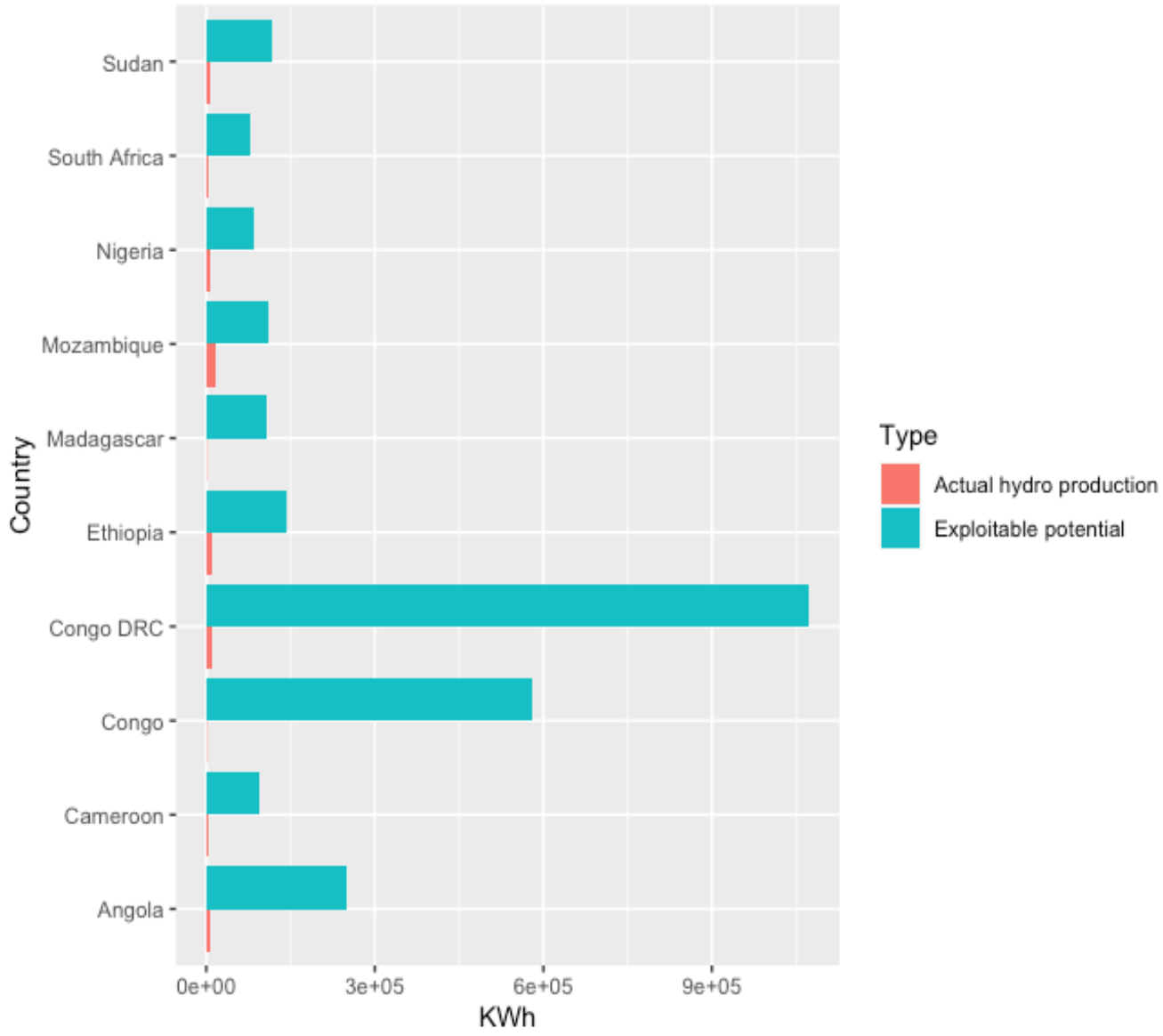

Figure 3: Exploitable and actual hydropower production in the top ten African countries

Data source: United Nations Statistics Division (2019) and Zhou et al. (2015)

The graph above shows the gaps between exploitable potential and hydropower production. It is a graphical representation of how much available potential has been exploited for hydroelectricity production. Much of the untapped exploitable potential is concentrated in Central Africa specifically in the DRC and Congo Brazzaville. The Congo River is the second-largest river in the world after the Amazon in terms of flow, and the second-longest in Africa after the Nile (Showers, 2009). This explains why much of the potential is concentrated in the sub-region. Although two dams – Inga I and II with a capacity of 351 MW and 1424 MW respectively – were built upstream of the Congo River to exploit the River's hydropower potential, they are producing under their installed capacity (Kusakana, 2016). Nonetheless, the DRC plans to exploit the water-for-energy resource the Congo River offers through the Grand Inga scheme.

In comparison to the other countries, Mozambique has made the most substantial effort in the exploitation of its water resources for hydropower production. This can largely be credited to the Cahora Bassa dam situated on the Zambezi River. The dam's installed output is 2075 MW of which 82 per cent is exported to South Africa. Whereas, Angola has the third largest exploitable potential in the region yet less than one million kilowatt-hours of that potential has been exploited. However, there are hydropower projects under construction and is planned on the Kwanza River as well as the Cunene River, south of the country. The ratio of hydropower production to exploitable potential depicts the dire need for dam development in Africa – it is an indication of the *wasted* socio-economic benefits that can be accrued for developmental purposes.

More so, the extent to which exploitable potential, when translated to production, can meet the growing electricity demand is an important factor. For this analysis, the exploitable potential is used to indicate *unused* production. This is not a perfect assumption because energy losses during production and transmission were not considered. However, for illustrative purposes, potential insinuates what could happen to demand for electricity, if investments for dam development increase in Africa vis-à-vis other regions. Thus, where the potential (unused production) exceeds demand, there will be a surplus resulting in a spillover effect. Where demand exceeds potential, countries will have to source alternative energy resources that are environmentally conducive and sustainable to meet domestic demand. The graphs below show

exploitable potential and its ability to meet domestic demand for the various regions of the world and in the top 10 hydropower countries in Africa.

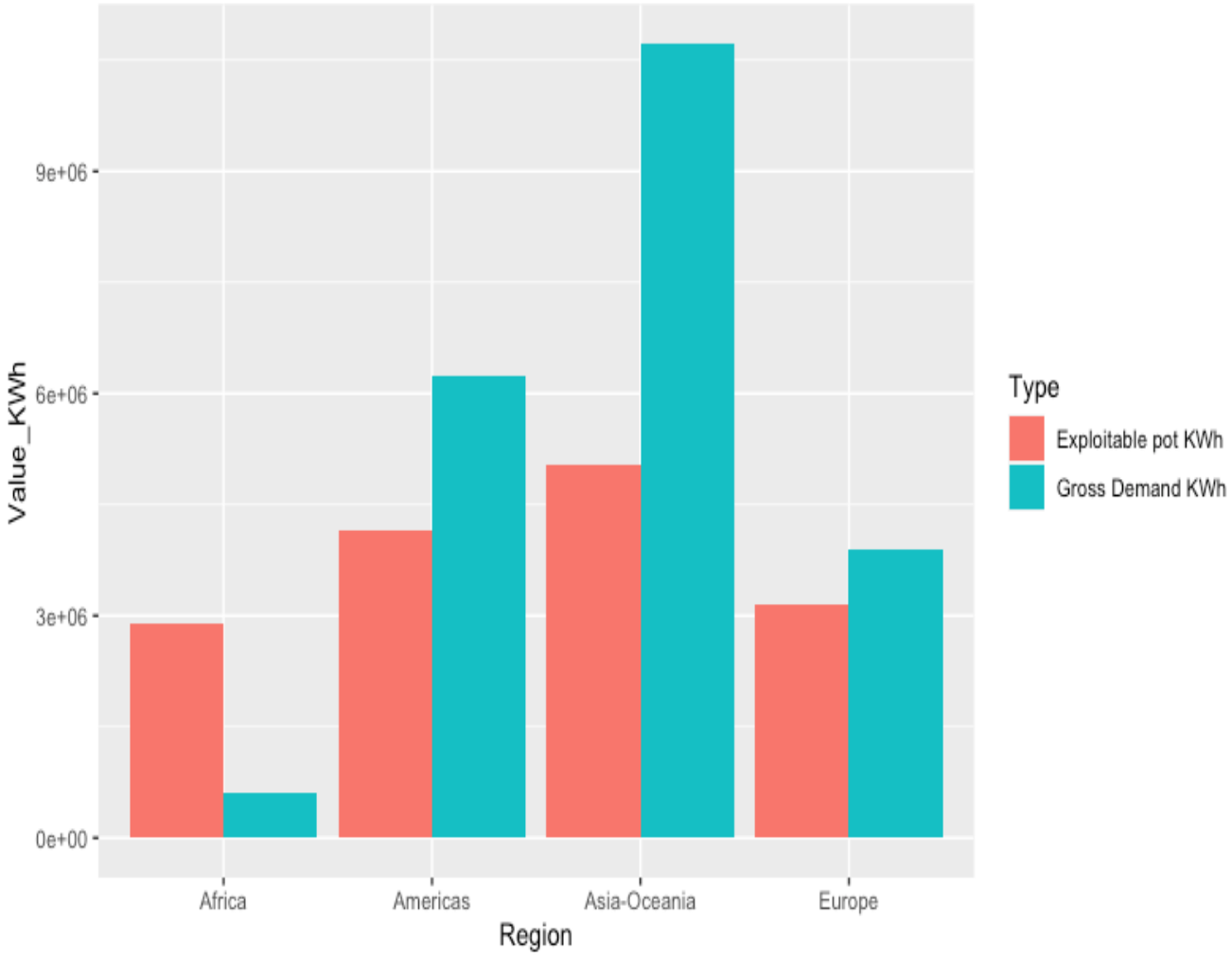

Figure 4: Gross demand and exploitable potential across regions of the world

Source: United Nations Statistics Division (2019) and Zhou et al. (2015)

The graph shows that all the regions except Africa have an electricity deficit since demand exceeds the potential to supply (measured as exploitable potential). Asia-Oceania has the highest gross demand for electricity in comparison to other continents in the world. With a demand above 10 million kilowatt-hours of electricity, Asia-Oceania only has the potential to meet 5 million kilowatt-hours of demand. The Americas has a deficit of above two million kilowatt-hours where gross demand is slightly above six million kWh and exploitable potential at above four million kWh. Similarly, Europe's deficit is probably less than the other two regions where the gross demand is close to four million while the exploitable potential is

slightly above three million kWh. These regions, based on the analysis, would need to develop alternative sources of energy both domestically and beyond, to cater to their respective deficits.

Africa, on the other hand, has an electricity surplus considering that its supply exceeds demand. The gap is a significant amount of electricity and has the potential to drastically improve both economic and human development in the region. Electricity is deemed a fundamental driver of both aspects of development. However, the statistics depict that renewable sources of energy especially hydropower is underexploited in Africa. Electricity adds value to economic development in many aspects but most importantly, it aids in the ease of doing business – banking and finance, manufacturing, research, health – and it improves everyday living for individuals in the society (Rao, 2013). This lends credence to the objective of this study, a case for an increase in hydropower investments in Africa. This would not only be beneficial in exploiting the available potential, but it ultimately improves the economic and social wellbeing of the region and its inhabitants. By extension, this attracts more investments and creates a pathway to more development through research and innovation. Although Africa has the least exploitable potential across the regions, the graph shows that it is enough to meet the growing demand for electricity with a surplus for export to generate additional capital.

Since Africa is the key region studied in this thesis, it is important to have a similar analysis within the continent. The graph below depicts the top 10 countries with exploitable potential in the region and its sufficiency in meeting the growing domestic demand for electricity.

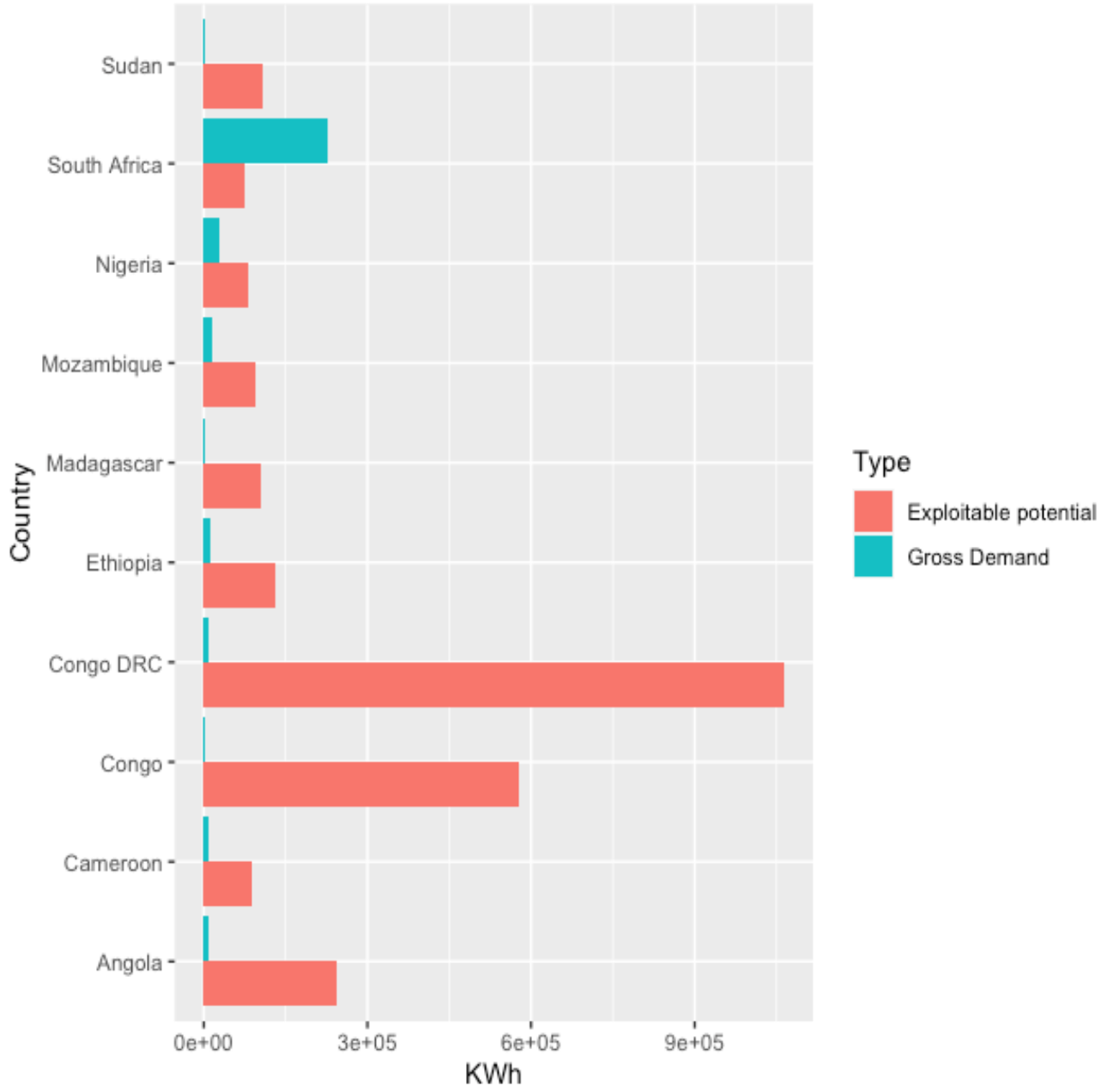

Figure 5: Exploitable potential and gross demand for electricity trend in Africa

Data source: United Nations Statistics Division (2019) and Zhou et al. (2015)

Using the same assumption where the exploitable potential is interchangeable with *unused* production, this graph depicts possible production versus consumption patterns should investments be used for dam development. The exploitable potential is concentrated in the Congo and the DRC; this is consistent with figure 1. Every country represented in the graph has different levels of exploitable potential, they can meet the domestic electricity demand, except South Africa. Seven African countries are yet to exploit the over 90 per cent of untapped

hydropower potential in their respective countries: Congo DRC, Congo, Angola, Ethiopia, Sudan, Madagascar, and Cameroon. Thus an understanding of the political economy of hydropower investments is pivotal to accessing funds and overcoming cooperation obstacles. South Africa tends to be the outlier in the analysis. It has the highest gross demand – roughly 75 per cent with only 25 per cent exploitable potential. In comparison to Nigeria, one would expect a higher gross demand of electricity given it has the largest population in Africa, 200 million people. Whereas South Africa has a population of 59 million but its electricity demand is higher (Stats SA, 2019). This indicates that challenges of production, access and affordability are deep-seated in Nigeria.

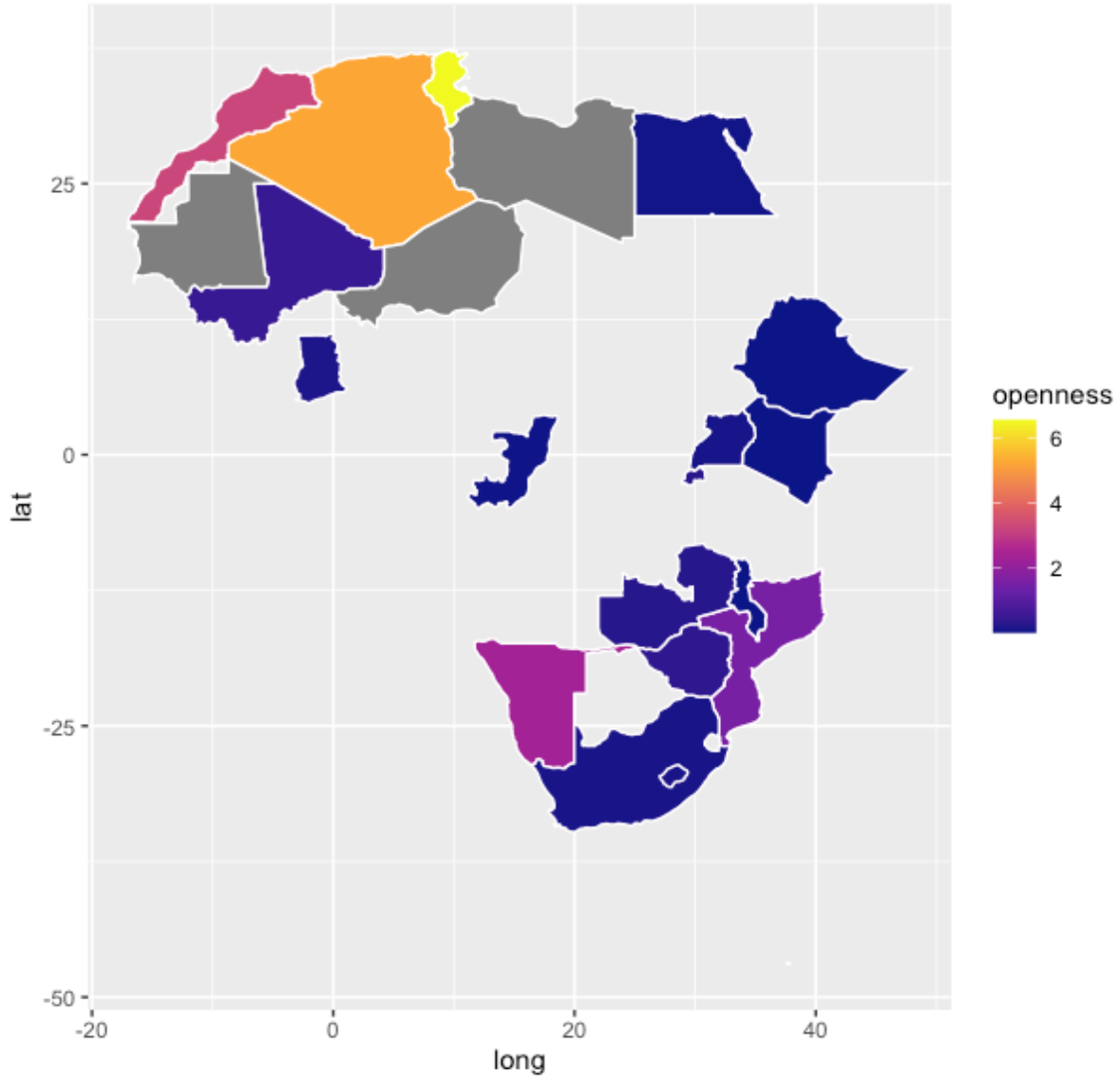

Figure 6: A choropleth map showing openness to electricity trade in Africa

Data source: United Nations (2016)

The choropleth map shows the variability in openness to electricity trade in Africa. The data for this graph was calculated by summing total exports and imports of electricity divided by total hydroelectric power production. The colours on the map represent the size of each country's openness to trade. The argument is that a positive openness to trade will result in a spillover effect where neighbouring countries benefit from surplus electricity generation. All countries represented in the map indicate that there is surplus electricity even though the amount varies from 0 to 6 kWh millions. As the colour gradient increases so do the openness to trade (from 0 to 6).

In Africa, high openness to trade is concentrated in North and Southern Africa. Tunisia, Algeria, Morocco, Namibia and Mozambique account for this pattern. This is indicated in the colour range from bright yellow (high) to plum/purple (low). The DRC's poor ranking in the graph can be explained by an assessment of hydropower production in the country. The Inga I and II produce electricity below their installed capacity while the Grand Inga is yet to be built. The countries with grey shading were excluded from the study because of missing data. These countries included: Mauritania, Libya and Niger.

In conclusion, the statistical analysis presented in this chapter emphasises the importance of exploiting the hydropower potential abundant in Africa. It showed that although the region's potential ranks low in comparison to other regions of the world, the exploitation of this potential will impact socio-economic and human development.

CHAPTER THREE: CREDIBLE COMMITMENT

Commitment problems are not exclusive to political actors; they pervade everyday life. Whether it is an individual simply writing down life goals to achieve within a set time frame or several international actors coming together for a cause, commitment is a goal-oriented action that continuously takes place in life. However, what makes the difference between an achieved goal and a failed one is an actor's ability to sustain credibility in its respective commitment. This implies that actors need to *religiously* choose strategies that lead towards the set goals. Thus, consistency and the desire for mutually beneficial outcomes are integral components of credible commitment in a cooperative arrangement.

Credible commitment is useful in assessing individual choices within cooperation. The decision of an actor to commit to an agreement is innate; it is not privy to others within the arrangement. Thus, the credibility of an actor's commitment is only made manifest by the course of actions (or inactions) it chooses to take. For example, an individual seeking home loan approaches a bank for finance and tenders his request. The bank has no way of knowing whether the individual is capable or qualified for a home loan until a thorough investigation into his credit records is carried out. How well the individual fares in his credit score is indicative of his ability to repay the bank should his request be granted. To the bank, a good credit score represents the borrower's discipline in being committed or bound to repayment. This implies that the borrower has been persistent in his repayment strategy (Ghemawat, 1991) in other similar cooperative arrangements. Thus, his individual decision to repay monies borrowed influenced the outcome of that respective arrangement and serves as an incentive for the bank to grant his home loan request.

Similarly, large dam investment cooperation outcomes vary because of the choices individual actors make on whether to credibly commit or act opportunistically. Where commitment is credible, cooperation is likely to yield a successful outcome and vice versa. Although an actor may pledge to follow through on the terms of an agreement both in the present and the future they may opt for an alternative course of action when the future time arrives. As a result, actors tend to take measures to protect their investments from the precariousness of the future. As per the example above, banks like any rational actor do not take the verbal pledge by loan seekers to make repayments over the specified period. They usually anticipate commitment problems

and act pre-emptively. Loan repayment takes years to complete and events of the future are unpredictable. Cognisant of these facts, the bank often puts stringent measures in place such as contracts with harsh consequences, to dissuade defection. For instance, the borrower may lose all monies paid including the house should he defect on repayment for more than six months. Despite the borrower's pledge to repay the loan, he had to provide evidence to prove his commitment to repayment. In this scenario, a good credit score serves as a form of persuasive communication aimed at convincing the bank of the credibility of his pledge (Schelling, 2006). It provided a perception of the borrower's reputation and attitude to cooperative arrangements. This logic applies to large dam investment cooperation.

This chapter examines the challenges of securing investments for large dam development through the lens of the credible commitment problem. It argues that this problem constitutes one of the major explanations for underinvestment in the region and by extension, the uneven patterns of large dam development in Africa. This problem emerges owing to the uncertainty of future events and the nature of the human. An investor is not privy to the commitment decision of the host government; it only becomes revealed through action or inaction. Uncertainty about the preferences of the host government in future and the assumed rationality of political actors undermine efforts to secure investments for project development. Investors, in an attempt to protect their investments from political risks, choose not to invest in the first place. Resultantly, the vast hydropower potential in Africa remains underexploited owing to lack of investments.

To explore these issues further, the chapter is structured as follows. It begins by operationalizing the concept of credible commitment. Following this, a game model will be simulated to foster an understanding of the challenges of credible commitment in large dam investment cooperation. Then, I review the literature on how to overcome and establish credible commitment in cooperative initiatives and categorise the mainstream themes into what I term "the three I's" – interest, iteration and institutions. The chapter ends by emphasising the contribution this study makes to academia – examining large dam investment cooperation from a political economy perspective with a sharp focus on the problem of credible commitment.

3.1. Conceptualising credible commitment (problem)

Commitment is defined as the persistence in strategy towards action or inaction (Ghemawat, 1991). It is deemed credible when an actor agrees to and complies with behaving in an agreed or specified manner until the duration of such arrangement elapses (Brunner, Flachsland, & Marschinski, 2012; Miller, 2011; and North, 1993). As Ghemawat (1991) argues, commitment gains its analytical strength from the high-level causal processes that it rests on which involve the principles of "lock-in, lock-out, lags, and inertia" (p.14). It builds on and extends beyond the cost-benefit approach to include an examination of the factors that motivate an actor's decision to persistently commit to an agreement. This necessitates a holistic examination of the subject-matter in terms of its past and present interactions as well as its perception of the future, to understand the factors that motivate persistence in cooperative behaviour. Also, the irreversibility implicit in commitment makes it important to look deep into the future instead of behaving myopically (Ghemawat, 1991, p. 14). Once an actor is committed to a course, it is difficult to reverse that decision. The actor is left with two options: to defect or comply. In prioritising defection, credible commitment problems emerge.

The problem of credible commitment provides insight into the difficulty actors face in large dam investment cooperation. It focuses on the challenges associated with a political actor's conscious decision to consistently subdue its propensity for self-interested choices and opt for those that affect collective benefits (Miller, 2011). Credible commitment problems emerge when actors make decisions based on short-term gains thereby undermining long-term policy goals and benefits (Becker, Dörfler, & Gehring, 2018). This implies that actors consider the immediate individual benefit from reneging over the long-term collective benefits of cooperation. It is important to note that different terms have been used in the literature to define this problem. While some literature synonymously refers to credible commitment problems as the challenge of 'hand-tying' (Fuhrmann & Sechser, 2014; Danilovic, 2001 and Pellegrina, Masciandaro, & Pansini, 2011), others describe it as 'locking in' (Ginsburg, Chernykh, & Elkins, 2008; Treisman, 2000) actors to an agreement.

Irrespective of the differences in terminologies, the underlying feature of credible commitment problems is that actors, especially political actors, can act opportunistically in self-interest to the detriment of the collective good. Actors, from a rational choice perspective, are rational

and goal-seeking. They are viewed as utility maximisers, constantly pursuing self-interest over collective gains (Snidal, 2002). Often, these interests are intrinsic (Danilovic, 2001). Other actors cannot at face value know whether these intrinsic interests tend towards credible commitment (inherent credibility) or are cynical (inherent cynicism). It can only be perceived through strategic behaviour or action. This innate nature of commitment decision-making adds a layer of complexity to the problem of credible commitment. Cognisant of the prevalence of such challenges in cooperative arrangements, investors tend to pre-empt credibility problems by putting regulatory mechanisms in place. Such mechanisms would aim to *tie* the actor's *hands* by *locking* it *in*to commitment until the lifespan of the agreement elapses.

Credibility problems have three main forms – cynical commitment, time-inconsistency problems, and the lack of a supranational authority to act as a credible enforcer. Together, they explain why an undertaking made by actors to behave cooperatively is not believed by their counterparts, particularly in the absence of regulatory mechanisms to enforce commitment. A cynical commitment is one where an actor pledges to act cooperatively even to the extent of signing an agreement but has no intention to follow through (Simmons & Danner, 2010). An example of a cynical commitment is an authoritarian government being a signatory to an international treaty on the respect of human rights. Although the act of signing the agreement could bode well for the government's international image and perhaps access to foreign aid, the regime has no intention of implementing such a norm particularly if it could potentially threaten its regime's security.

Similarly, time inconsistency problem occurs when an actor sincerely commits to an agreement beyond being a signatory, but in a future time, opportunistic defection becomes a more rational option (Brunner, Flachsland, & Marschinski, 2012; Simmons & Danner, 2010). It is a situation where an actor has a preference for a particular policy in advance but when the time comes, the preference changes. For example, a country may favour protectionist policies to protect its infant industry from fierce international competition. But in future, the government may find free trade agreements attractive given that its industry's preparedness for international market competition has improved. Finally, the absence of a credible enforcer in terms of a *third party* personified as a supra-national authority to police the compliance of actors further complicates

credible commitment problems. The role of this third party or credible enforcer is to monitor compliance, incentivise commitment and punish defection (Simmons & Danner, 2010).

To understand the ubiquity of credible commitment problems in large dam investment cooperation, the next section offers a game simulation. It depicts a simplified investment decision-making scenario involving a host government and key hydropower investors.

3.2 The game model

For illustrative purposes, consider this example. An imaginary sub-Saharan Africa country, Nizana, has huge untapped exploitable and economically feasible hydropower potential. However, there is a shortfall of electricity generation and distribution to households and businesses in the country. The government has recently decided to develop its hydropower potential to meet the growing energy demands and by extension, increase the share of renewable energy in its consumption mix. But, the financial costs of the dam exceed the coffers of the state. As a result, the government has decided to seek investments from essential investors to finance the project. The game tree below demonstrates the credible commitment challenges that ensue in the interaction between the host government and essential investors.

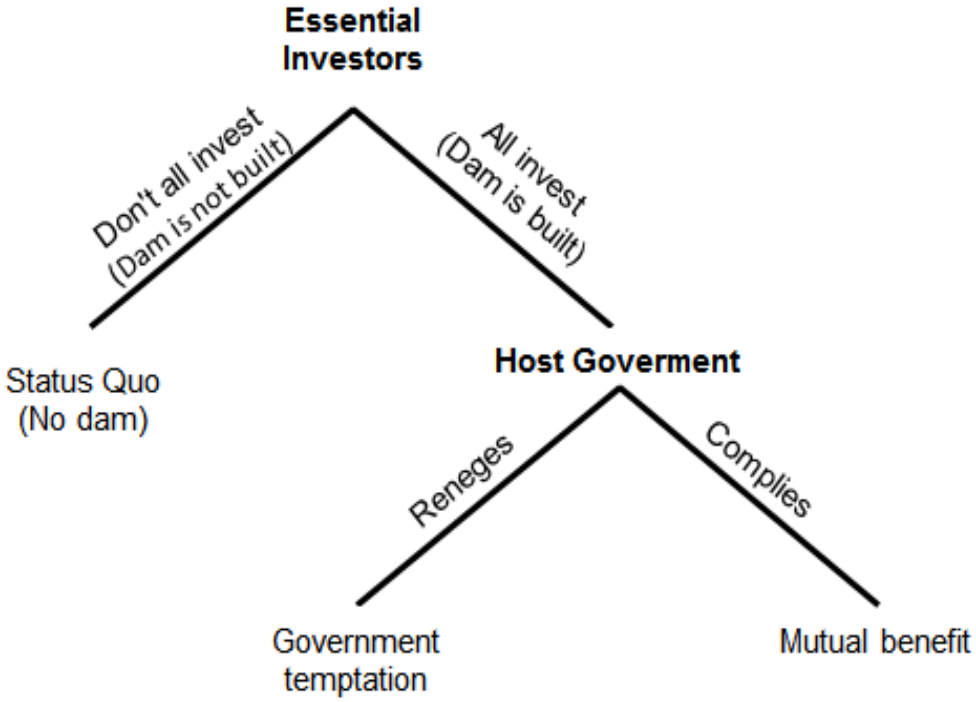

Figure 7: Credible Commitment Game Tree

Source: Author

Having been presented with the proposal to finance the large-scale hydropower dam by the Nizanaian government, the essential investors have the option to invest or not invest in the project. Investment decisions, in this case, would be made after a cost-benefit analysis. For an economic project of this nature, investors would be concerned about the lucrative nature of the project that is, the prospects of making high returns on their investments; associated risks – political, social, economic, and environment; and the availability of capital to fund the proposed project. If the associated costs of the project outweigh the benefits, it would dissuade essential investors from plunging capital into the project. No further action takes place concerning the development of the dam project. In this case, they would not invest and the status quo remains the same with no dam built. Where reverse is the case, that is the benefits being greater than the costs, essential investors are incentivized to invest in the project resulting in the dam getting built.

Upon deciding to fund the project, essential investors agree with the host government. At this node on the tree, the host government has two options each having an impact on the outcome of the collaboration, defined by successful completion and operation of the dam. The Nizanaian government can either renege or comply with the agreement. Once agreements are signed and underway, the government may face strong temptation to renege on the agreement. This is characterized by a time-inconsistency problem where a rational decision in the present to commit to an agreement may not be as rational in a future time. That is, it may no longer be in the interest of the Nizanaian government to follow through on its commitment with essential investors in future. Government temptation, if yielded to, results in the government defaulting on its commitment. Where the government can ward off temptation and continually comply with the specifications of the agreement, mutual benefit is reached. The benefit is mutual because the Nizanaian government would have achieved its goal, which was large dam construction and operation to meet the growing electricity demand, while the investors would yield returns on their investments. It is important to understand the preferences of each actor to deduce the credible commitment problems that would emerge from this interaction.

The preference of any investor is to yield returns on their investments. This implies that they are more likely and willing to act in ways that align with their preference or interest. The preferred outcome for essential investors is as follows:

Mutual benefit > status quo (no dam) > government temptation

The above equation denotes that mutual benefit is greater than the status quo which is in turn greater than government temptation. Investors would prefer a favourable outcome for all parties involved because it ensures that they yield returns on their investments (mutual benefit). If the host government and all investors privy to the financing of the project commit to the agreement, the dam will be constructed and become operational. The second preference for essential investors would be for the status quo to remain the same. No investment would be ploughed into dam construction or project implementation. This outcome ensures that essential investors retain their resources and avoid losses that may emanate from investing in a sunken cost asset with no returns. The least preferred outcome for essential investors is to finance the project and the Nizanaian government reneges on the agreement at a later stage. This implies a loss of investments for the investor. Thus, for the investor, mutual benefit as an outcome is greater (better) than the status quo; this, in turn, is better than government temptation.

The preferred outcome for the Nizanaian government or the host government is to see the dam constructed and fully operational to meet the electricity demand. This implies that they would be willing to act in ways that align with this preference or interest. The preferred outcome for the Nizanaian government is as follows:

Mutual benefit > government temptation > status quo (no dam is built)

The equation denotes that mutual benefit is greater than government temptation which is greater than the status quo (no dam is built). The Nizanaian government would prefer a favourable outcome that is, a mutual benefit just like essential investors. The difference between both actors is the means to the end – how to achieve the said favourable outcome. If the host government continually signals credible commitment, it encourages essential investors to be equally vested in financing the project. The next preference for the host government is to renege on the agreement after investments have been made. Assume the agreement to fund the dam project specified that the Nizanaian government would have to sell electricity output at R18 per kWh to ensure loan repayment within 10 years. The dam has been constructed and is fully operational, but elections are looming in a couple of months. The Nizanaian citizens have demanded a reduction in the electricity tariff considering that it is a public good. The incumbent government would like to remain in power and therefore it is in its strategic interest to renege on the agreement on electricity pricing. This would affect the debt repayment time frame. The government benefits from reneging because it would have met the needs of the people pertinent to its political goal of remaining in power.

Another scenario depicting government temptation occurs if essential investors have made some investments into the project and before completion, the Nizanaian government reneges. In this instance, assuming essential investors made the host government make some political changes as a way to condition their behaviour, ensuring that they credibly commit to the terms of the agreement. The government may willingly accept to meet the terms of the agreement only until it finds an alternative source of investment that is more vested in the economics of the project than in the politics of the country. In this instance, essential investors lose the capital and resources that have been sunk into developing the project to a certain point. The host government remains a winner because the new investor would only continue from where essential investors stopped. If essential investors are development banks, they are better poised

to absorb such risks than commercial or private investors. Hence, government temptation is the second optimal preference for the host government. The least favoured preference for the Nizanaian government would be for the status quo to remain the same – no dam built, electricity demand remains unmet and can harm the political aspiration of the current government.

In reality, the interaction between the host government and essential investors begin at the bottom of the game tree. This implies that the predicted behaviour of the host government by essential investors plays a fundamental role in the option the investor chooses. Other than the remunerative nature of the dam and the availability of capital, the decision on whether to invest is premised on two key factors – the behaviour of the host government and the behaviour of other investors in the project. The Nizanaian government is a rational actor whose strategic behaviour adjusts based on the circumstances it finds itself in. Uncertainty is a constant and actors are consistently adjusting their preferences and behaviour to suit their ever-changing interests. When it comes to essential investors vis-à-vis the behaviour of the host government, the decision-making process begins at the bottom of the game tree. That is, the essential investors attempt to foresee the future and work *backwards* towards formulating a pattern of behaviour by the host government. This would essentially inform the decision on whether to invest in the project.

As assumed, the Nizanaian government has requested some key investors to fund the development of a large dam in the country. The investors, in considering the project, are concerned about the feasibility of implementing the project. Their concern is based on the fear that once they have sunk their investments into the project, the government will renege on its commitment. This implies that government temptation will cause the government to renege. If essential investors consider the possibility of future defection to be less likely, they will be willing to invest in the project for mutual benefit; the dam will get built and electricity demands can be met. But, where essential investors consider the possibility of future defection to be highly probable, they are less likely to invest; the status quo remains the same – no dam will be built.

The discussion thus far has focused on the impact of the host government's behaviour on essential investors' decision-making for large dam development. To predict the behaviour of

the host government, investors source for information on previous and current collaborative and investment initiatives the host government is involved in. This provides insight into the character of the government in keeping to or defaulting on commitments. Also, the domestic political and economic dynamics signal the government's ability to commit credibly to an agreement in future. A domestic environment that is marred by a sporadic outbreak of conflict, high levels of corruption, low levels of accountability and transparency, vulnerability to external shocks in the market, devalued or overvalued currency, and volatility are poor credible commitment signals to investors. Hence, investments for large dam development in Nizana are heavily dependent on the government's ability to signal a credible commitment to essential investors. In addition to this, the behaviour of other investors has a huge bearing on the investors' decision on whether to fund the project.

So far, I have treated *essential investors* as a unitary actor. Dam financing and development usually involve a consortium of investors, each with its interests. The interest and behaviour of each investor depend on the actions of the rest of the consortium of investors. Examples of such investors include but are not limited to the host government, key parastatals, private developers, international financial institutions, engineering firms, and commercial banks. Credibility problems emerge among investors when each commits a certain percentage of funds to finance the project, and one or two actors choose an alternative course of action. It affects the ability of the other investors to commit often leading to a breakdown in cooperation considering that each investor is co-dependent on the other. Thus, the problem of credible commitment is prevalent among investors of long-term projects and often requires regulatory mechanisms to lock them into the agreement.

Another complication to the model is introduced by the role of regional actors or off-takers. A fundamental factor that necessitates investments for large hydropower dam development is a readily available market(s) to sell off (surplus) electricity. Investors find a hydropower dam project bankable when there are guaranteed off-takers (or buyers) willing to purchase the electricity output upon the completion of the project. The rent made from the sale of electricity can be used to offset production costs. Hence, an agreement between the Nizanaian government and electricity-poor neighbouring countries is pivotal to securing investments from essential investors. If the Nizanaian government commits to sell electricity to neighbouring country

Kongola at a rate below competitive market price, it is expected to follow through on its commitment in due time. If the government reneges, its actions can have a spillover effect on other cooperative arrangements with Kongola, including peace and security.

The above analysis using the game tree model depicts the centrality of the host government's credible commitment to a successful cooperation outcome. To secure investments, a government has to influence the perception and behaviour of potential investors towards participating in project development. In convincing the investors, the host government has to show that an alternative set of strategies would not be preferred in future over the ones agreed upon in the present. As illustrated, when the host government can successfully achieve this then investors are more likely to invest. The reverse is the case if they are unable or unwilling to. It is important to note that the illustration above is a simplistic simulation of the interaction between the host government and the investors. Having assessed the credible commitment challenges that emerge in the interaction between the host government and several investors for dam development, it is important to understand why credible commitment problems exist in large dam investment cooperation.

3.3 Why do credible commitment problems exist in large dam investment cooperation?

There are two main reasons why an actor's verbal or signed pledge is not a guarantee of credible commitment, especially in large dam investment cooperation. These are uncertainty of the future and human nature. In addition to these, issues such as the number of actors in an initiative, the characteristics of investment decision-making and mega projects, the nature of the electricity industry and its associated costs, all add layers of complexity to the credibility problem in large dam investment cooperation. An understanding of the root causes of credible commitment problems in large dam development is essential in prescribing measures to address them. On a broader scale, it serves to equip host governments and investors alike seeking to participate in such collaborative arrangements. This section discusses each of these factors, explicating on their likelihood to undermine investment cooperation.

3.3.1 Uncertainty

Uncertainty, simply put, refers to the unpredictability of future events; the state of being unsure about occurrences in the time ahead (Morrow, 1997). Although actors make efforts to predict and plan, events of the future are indefinite. Within collaborative arrangements, actors are uncertain about three major things, all of which are instrumental in understanding why credible commitment problems exist in large dam investment cooperation. Firstly, actors are uncertain about the behaviour or action of their counterparts. It is difficult for actors to ascertain whether their counterparts will be as cooperative in both present and future times as they pledged to be. Depending on the nature of the collaboration, it is challenging for other actors to 'check' if their counterparts are meeting their end of the bargain.

Having entered investment cooperation, credible commitment is expected of all collaborating parties. However, expectation does not equate to adherence. Participating actors have no way to verify the unforeseen actions of their counterparts until they are acted out and even then, it may be difficult to detect. This is because time-inconsistency problems may emerge in future where it becomes rational for an actor to defect despite having signed a written agreement. The inability to anticipate and verify if an actor's actions tend towards the collective goal creates an enabling environment for credible commitment problems to emerge. This problem becomes more complex where multiple and fragmented (N-player cooperation) actors are concerned. Compliance among peers becomes more difficult to detect and subsequently retaliate without cooperation collapsing. This mode of uncertainty is predicated on the fact that actors do not know the intentions and motives of others; this is what informs behaviour or action.

Secondly, actors are uncertain about the preferences of other actors. This type of uncertainty concerns the intentions and motivations for why actors participate in a collaborative arrangement. Although all actors in a collaborative arrangement are committed to a pre-determined collective goal, the rationale for participation differs among the actors. For instance, a country is a signatory to the human rights treaty in its region, yet it maintains an outright authoritarian regime. The intention for the government may be symbolic, that is, an indication to the rest of the world for the (future) purpose of seeking aid and investments, that it is taking strides towards protecting the rights of its citizenry by being a signatory. Other actors may actively use the treaty to lock themselves into taking practical steps to respect and

protect human rights domestically. Thus, when actors decide to converge for development investment purposes, they have a similar goal. Although the prospective collaborating actors all prefer a favourable outcome however, there tends to be a discord between the parties on how to achieve the collective goal.

Each actor would prefer that the strategies adopted in the pursuit of the collective goal, suit their respective interests. For instance, the private investor is concerned about profit margins and the bankability of the project. Hence, without a guaranteed off-taker, private investors are more likely to not participate in a collaborative arrangement. Development banks on the other hand are concerned about loan repayment as well as the development impact of the project. Often, especially where international financial institutions are involved, development impact moves beyond improving socio-economic welfare to the restructuring of key domestic institutions. The justification for such acts has often centred on the argument that strong domestic institutions of accountability and transparency make a country attractive to investors – a liberal argument. For neighbouring off-takers, access to cheap and reliable electricity is preferred alongside preferential treatment in electricity pricing. Thus, the interests of these actors and their penchant to pursue strategies to achieve their interests shape their respective strategic behaviour (Shepsle, 1997). And, the desire for opportunism becomes heightened owing to the unpredictability of the future.

The third form of uncertainty pertains to the precarious nature of the future. Unforeseeable circumstances that challenge or strengthen the credible commitment of actors to an agreement may occur in future. For example, the host government may in the present, have limited funding options for dam development – the development bank, private investor, and state. However, in future, an alternative funding source may emerge with less stringent conditionalities; one that better suits the interests of the host government. In such a case, the host government is highly likely to renege on its commitment to its initial financiers and opt for the alternative. Conversely, investors may no longer find the project to be lucrative in future and may decide to opt-out of it, leaving the host government with an incomplete dam project. Other circumstances that may occur include but are not limited to natural disasters, increased severity in the impact of climate change on such infrastructure development and a pandemic outbreak. These factors and the different forms of uncertainty have high prospects of changing the

‘business as usual’ mode of operation. This emphasises the argument that uncertainty shapes the instrumental rationality of actors; it causes actors to change their course of action as future events unfold (Shepsle, 1997).

3.3.2 Human nature

In addition to uncertainty, human nature is another reason why credible commitment problem exists in investment cooperation. Human nature is intrinsically geared towards self-preservation. Mainstream theories of international relations assume that actors are rational and utility maximisers who consistently choose the most optimal of preferences and outcomes in any social interaction. Cognisant of this trait, when a host government promises to fully meet the terms of an agreement, it is barely believed by essential investors except there is proof beyond a reasonable doubt that eliminates any prospects of defection. This proof usually takes the form of regulatory mechanisms established by the investor to lock the host government into committing credibly.

The assumed rationality of actors can create an enabling environment for opportunism, that is, the pursuit of self-interest with guile (Williamson 1991). In the pursuit of self-interest, actors can deploy deceit-tactic that undermines the overall collective goal. To respond to one actor defecting, others within the collaborative arrangement can potentially defect by mirroring the actions of the defector. This leads to a total collapse of the arrangement. In large dam investment cooperation, investors are aware of the political salient nature of public goods particularly electricity. Political actors can leverage on electricity to win votes in upcoming elections. For instance, once the project has been completed, the host government may decide to cheapen the price of electricity tariff contrary to the initial agreement intended to recover production cost, to earn the votes of its domestic constituency. In this case, it becomes challenging for the government to repay investors in the agreed time further deepening investment risk to the latter. The penchant for such opportunistic behaviour is made complex when the number of actors involved is large and fragmented.

3.3.3 Number of actors

Credible commitment problems exist whether in a two-player or an N-player game setting; however, the dynamics is more complex and multi-faceted when multiple stakeholders converge. In the presence of multiple actors, the criteria to be fulfilled by the host government multiply. As a result, the host government may find itself reneging in future to meet the various criteria stipulated by the various actors. Adherence is more favourable under smaller groups. Having established that actors are rational, each with a divergent interest, the commitment challenge that emerges concerns the conscious decision to subdue self-interest tendencies in pursuit of actions that tend towards the collective goal. In large dam development, investors range from states and regional organisations to development banks, private and commercial banks and engineering firms, among others. The interest of each actor determines their stake in the project, which also determines the level of their credible commitment.

For the host government, one can argue that the development of the large dam is central to the identity of the government. And, if the host government has one major investor, then it becomes easier to address any credibility issues that may emerge. But, when there are multiple actors involved, each with a specific requirement from the host government as a "safeguard" measure to prevent commitment problems, it becomes challenging for the host government to successfully commit. The capacity to commit to each of the conditionality prescribed by the investors can be undermined; thus, commitment becomes counter-intuitive. On the other hand, one can argue that the multiplicity of actors required for large dam development in the present day is purposeful; it is aimed at risk-sharing. This collaboration becomes more complex in an N-player setting where each actor is constantly changing their payoffs to achieve an outcome that aligns with their interests. In this case, the host government is often expected to compromise on its interests in other to implement the project. The host government often must make certain structural and institutional changes to suit the interests of investors that is, providing some guarantee ahead of project implementation. Investors often adjust the process so that the result is their expected outcome – yield in return and an independent government that can manage the process of electricity generation, supply and distribution in a transparent and accountable manner. Considering that high levels of political risk and uncertainty often meet large dam investment flows into sub-Saharan Africa, it is only rational for investors to devise measures to protect their investments from risk. This makes investment decision-making cumbersome and rigorous.

3.3.4 Characteristics of investment decisions and mega projects

Investment decisions require investors to have complete or 'perfect' information about the country or project they are considering investing. In real-life, information is not always available, and investors have to make decisions based on the limited available information. This could have a far-reaching effect because investment decision becomes a gamble – you win some and lose some. Investment decisions are said to share three major characteristics to varying degrees. They are partially or completely irreversible in that once the initial cost of investment is made, it is difficult to recover it all if the investor changes his or her decision. Secondly, there is an element of uncertainty about the future rewards from the investment; certainty is only guaranteed to the extent that all else being equal participants commit credibly to the agreement. Thirdly, investors have some flexibility in deciding on the timing of the investment. The latter implies that investors have the option to wait for more information about a prospective host country or projects before opting to invest. However, this does not guarantee the evasion of risk and uncertainty about future events. Given these three characteristics, investment is defined as "the act of incurring an immediate cost in the expectation of future rewards" (Dixit & Nalebuff, 1994, p. 3).

This logic applies to large-scale hydropower dam development that is international in scope, that is, involving collaboration between two or more international actors. Large dam development requires huge upfront capital investments to offset costs like feasibility and environmental impact assessment for instance. Once funds are been used to hire experts to execute the study, finance structural set up such as offices, telephones, Internet, to ensure that services are operational and efficient, the capital cannot be reversed or recovered. Experts would be unwilling to pay back their allocated fees simply because the project failed; this is an example of a sunk cost. Secondly, investors cannot guarantee that once the project has been completed, the host government will behave in the specified or agreed manner to ensure a repayment of loans (with interest) borrowed to finance the project. Finally, investors both private and development banks are at liberty to hold-off on investing until certain conditions have been met. Although this would to some extent ensure that the host government is tied to the agreement, it does not, however, imply that it would follow through considering that compliance is self-directed with no supranational authority to credibly enforce commitments.

Investment decisions in large dam development are complex owing to the size of the project. Megaprojects are large-scale utility schemes that provide public good not only to the citizenry of the host state but also to potential off-takers in immediate and distant regions. Large-scale hydropower dams are colossal in size and scope. According to the International Commission on Large Dams (2011), a dam is considered large when it is 15 meters or greater in height from the "lowest foundation to crest or a dam between 5 and 15 meters impounding more than 3 million cubic meters." The size of the project reflects the high capital cost that is needed for project implementation. These costs are usually underestimated at the initial planning and projection stage, and they tend to increase over the life of the project.

Also, projects of this size receive backlash particularly from environmentalists and social activists on the environmental and social implications of large dam construction. They cite potential displacement of peoples from ancestral land, changes to biodiversity as well as livestock, risk of floods and farming culture. High levels of uncertainty and risk in terms of design, funding and construction underscore mega projects. Also, large-scale dams tend to have political motives behind them. Disputes over ownership of water and land resources can stall dam construction in the future. Most of the risks associated with large dam construction are unforeseeable to a certain extent and as a result, investors attempt to ring-fence their investments by creating mechanisms to protect them from the shadow of the future.

To manage risks and ensure that all stakeholders credibly commit to the terms of an agreement, the project becomes laden with control issues. Decisions about who the key decision-makers are, what agency/agencies should manage and/or operate the project, and who the main project financiers are and what restrictions or conditions are outlined as the criteria for financing the project (Frick, 2008). Resultantly, the credible commitment challenge for the host government becomes more severe in an attempt to meet the requirements of every stakeholder in the cooperation arrangement. The government over-stretches itself in trying to meet each condition so that in a future time, it becomes rational for the host government to opt-out of the agreement.

In a long-term investment agreement such as dam construction, investors attempt to protect themselves from risks by setting up conditions or policies that restrict the government (to an extent) from defecting on the agreement. In the absence of strong domestic institutions,

investors often establish a supra-national or separate organisation to manage cooperation affairs as opposed to relying on state apparatus. This way, investors can with some autonomy determine the terms of engagement with the host government in ways that attempt to minimise the likelihood of uncooperative behaviour. This, therefore, makes the cost of defection relative to expected gains higher for the host government. But, the higher the cost relative to the expected gain from making a credible commitment, the less likely a government is to credibly commit throughout the project. Similarly, where potential gains are higher than the costs, it incentivizes credible commitment. The government will be willing to commit to an agreement where the costs are higher relative to the potential gains in the absence of an alternative investor. The dilemma is that investors are always trying to make the associated costs high to lock governments into the agreement. The government, on the other hand, is attracted to investments with low associated costs but high potential gains.

The nature of investment decisions involves the risk of sinking resources into a project and yet being uncertain about the investment yielding returns in future. In the absence of mechanisms that provide some level of surety to reduce uncertainty about expected gains, investors are likely to not invest in a project. In addition to the features of investment decisions, the electricity industry is politically salient and susceptible to the will of political elites. This is largely so because, in most parts of the region, electricity is considered a public good. Further compounding the credibility challenge is the fact that a project of this magnitude, a large-scale hydropower dam, takes years to implement and involves multiple stakeholders – each with a varying interest with a common goal.

Within a hydro development scheme, the host government is more likely to harness investments and adhere to the terms and conditions stipulated as a basis for the investment if the number of actors involved is smaller in number. For example, it is easier to partner with a development bank, taking the lead on the project while experts are hired under the auspices of the state and the bank. Decision making within large groups becomes complex.

3.3.5 Nature of the electricity industry and associated costs

Another reason why credible commitment problem exists in large dam investment cooperation is the nature of the electricity industry. Electricity as an intangible commodity requires certain

types of infrastructure to transmit from the site of generation to the end-user. Infrastructure like pylons, transmission lines, and power stations need to be erected to receive a load from the dam and enable distribution to the consumer. This further raises the cost of developing a dam; it is not limited to feasibility and impact assessment studies and construction. Where electricity must be transmitted to neighbouring countries and through a transit country, uncertainty in the behaviour of the host government and the other regional actors undermine a successful outcome. To have a buy-in from neighbouring countries to purchase the electricity output, the host government must send a strong credible commitment signal so that investments once sunk can yield returns.

Also, the politically salient nature of electricity as a commodity is underpinned by the fact that the government sets electricity prices and tariffs. As earlier discussed, the host government can leverage the public good nature of electricity to wield electoral votes or for continued stay in power given that tenures in political office are finite. It could also be used as a tool to project regional power on neighbouring buyers. If political tension occurs between Nizana and Kongola, the government of the former may use the supply of electricity to the latter as a tool to condition the latter to adopt certain policies or behave in a specified way.

Finally, associated costs refer to the cost resulting from investment cooperation. The nature of the project suggests that heavy capital investments and a lengthy period marred by multiple negotiations are resulting from the project. Uncertainty and poor domestic institutions aggravate political risk factors thus dissuading the investor from committing in the first place. However, if investors choose to participate in investment cooperation despite these challenges, often, institutional and contractual mechanism are devised to avert the proclivity for the pursuit of self-interest with guile. As a result, investors tend to make the cost of defection costly in relation to expected gains. The expectation is to dissuade the host government from reneging. On the contrary, it often serves to incentive defection by the host government. This is because when the host government, like any rational actor, perceives the cost of cooperation to be higher than expected gains, it becomes rational to find an alternative course of actions that are comparatively less costly while yielding relatively better gains.

Also, governments with strong domestic institutions are more likely to remain committed to an agreement irrespective of the cost. In this case, the government's credible commitment is incentivised by its domestic constituents who can punish the political head or leader should they defect. The logic is that leaders are accountable to their citizens and when they fail to follow through on a commitment or threat in an international setting, their domestic constituents tend to punish them. Punishment here largely entails the removal of the political head from office. The risk of being ousted from office for failing to credibly commit to an agreement is defined as an audience cost (McGillivray & Smith, 2000). Such risks make defection on international agreements less desirable to host government (Leeds, 1999). Thus, investors often feel confident entering investment cooperation with such host governments because there is a certain level of political risk aversion mechanism as personified by the domestic constituencies.

This section discussed the key reasons why credible commitment problems exist in large dam investment cooperation. Challenges such as the number of actors, nature of investment decision-making and mega projects, to the nature of the electricity industry and its associated costs in large dam development against the backdrop of uncertainty and human nature, all create an enabling environment for credibility problems to thrive. Having established these challenges, it is crucial to examine how they can be addressed. The next section explores the arguments in mainstream literature by categorising them into three key recommendations: interests, iteration, and institutions.

3.4 How to establish credible commitment

The issue of credible commitment and collective action has been adequately explored in the literature. Theoretical perspectives such as organizational behaviour and rational choice have been prominent in the literature (Robertson & Tang, 1995). However, my review of the literature will be argument-based rather than theory-based. An argument-based assessment enables an in-depth examination of the recurring themes on how to establish credible commitment across the literature, irrespective of the theoretical affiliation. A theory-based assessment amplifies the theoretical underpinnings of an argument including the corresponding ontology, epistemology and methodology. Thus, I categorise the key arguments in the literature into three key themes namely interests, iteration, and the use of institutions.

3.4.1 Interests

There are two mainstream perceptions of the relationship between self-interest and credible commitment. While one stream posits that self-interest (with guile) is detrimental to credible commitment and cooperation (Williamson, 1991; Cadwell & Canuto-Carranco, 2010), the other argues that the relationship can be complementary (Oye, 1986). The literature I categorise as the middle-ground are those that view self-interest as impacting on credible commitment in the presence of a third party or regulatory mechanisms. Before explicating on these arguments, it is important to foreground the term 'self-interest', what it entails and its relationship with credible commitment.

Self-interest involves an actor consistently adjusting its preferences and choosing strategies that promote its welfare (Sen, 1990). Thus, self-preservation – a characteristic that is innate to the human – is an actor's default and dominant strategy. But self-preservation becomes challenging when two or more actors unite to achieve a common goal. If all actors choose self-preservation as a dominant strategy, cooperation is highly likely to collapse. Hence, the theory and practice of cooperation suggest subduing self-preservation for *collective* preservation. This implies that actors are required to "replace personal welfare for *expected* personal welfare" (Sen, 1990, p. 32) by being altruistic. As a result, one can argue that credible commitment emerges because actors hold themselves to some level of moral standard that prompts them to negate individual gains for the collective good. From this reasoning, establishing credible commitment fundamentally concerns a choice between self-interest and altruism.

Self-interest is viewed as detrimental to credible commitment because of transaction costs and opportunism. Hobbes argues that humans are only concerned with their respective self-interests. They have no interest in enhancing the wellbeing of others or pursuing collective goals over individual ones (van Lange, 2000, p. 299). Scholars like Williamson (1975, 1979), Shepsle and Boncheck (1997) draw on the Hobbesian model, thus centralising the logic of opportunism in transaction cost. Williamson defines opportunism as self-interest seeking with guile where the incomplete or partial disclosure of information. It aims to mislead, distort, disguise, confuse and complicate the recipient of such information (Williamson, 1975, pp. 234, 255). He emphasises that opportunistic behaviour extends beyond the mere desire for short-

term gratification to include the use of deceit-tactics. Thus, within international cooperation, any actions taken towards self-preservation (which I argue drives self-interest) whether done innocently or deceitfully to undermine long-term policy goals, is considered opportunistic.

This perspective has been used to study behavioural patterns across different sectors ranging from carbon policy to nuclear deterrence to organisational behaviour and effective productivity. For instance, (Cadwell & Canuto-Carranco, 2010) found that within organization opportunism or self-interest with guile undermines organizational effectiveness and negatively impacts on relationships within the firm. Nonetheless, there is an acknowledgement that all actors are opportunistic to varying degrees where those who are less opportunistic are not always visible, even then, most actors have a price at which they are willing to sacrifice altruism (Williamson 1979, p. 234n). Thus, concerning credible commitment, opportunism according to this view, is one of the major reasons why a mere pledge by actors to commit credibly to an initiative is not believed without mechanisms that lock actors into their commitments (Williamson 2000). Such mechanisms would serve to dissuade opportunistic behaviour by incentivising cooperation and making the cost of defection high. This perspective tacitly recommends altruism and the use of regulatory mechanisms – which undermines any opportunity for opportunistic behaviour – as fundamental to addressing credibility problems.

The second stream of argument emphasises that self-interest can promote credible commitment and cooperation. The key ingredient is an alignment in the interests of collaborating fragmented actors. Stone (1975) emphasises this point by arguing that treaties of alliance between all forms of political organization can continually remain an alliance as long as the collective goals remain compatible with the perceived interest of the participants. This is an alternative approach to the threat of opportunism. It is important to emphasise that alignment or compatibility in interest does not equate harmony, which alludes to homogeneity in interests (Axelrod & Keohane, 1986). This implies that all collaborating parties, though having divergence in interests, are willing to continually adjust their behaviour in ways that tend towards achieving the collective goal. The strategy here is to design agreements in such a way that there is co-dependency on each actor's strategic acumen. This way, each actor's participation becomes visible and the propensity for free riding is limited. One of the ways to align the interests of actors in such initiatives is to create incentives. Through incentives, an

actor's self-interest becomes synonymous to that of the collective good. As a result, credible commitment becomes self-motivated that is, adherence becomes self-enforced by the actor.

It is important to note that self-interest is intrinsic to an actor's perception of cost versus benefit. Where the advantages of cooperation are surmountable enough to outweigh costs, credible commitment is self-imposed. But, against the backdrop of uncertainty, costs and benefits are subject to change. For instance, when a host government encounters an alternative source of funding with less stringent conditionalities, it becomes challenging to credibly commit to the present agreement. This implies that decisions are not static – an optimal strategy today may become sub-optimal in future thus the mere alignment in the interests of actors may not be enough to address credibility problems. In such cases, repeated interaction adds a layer of safeguard against credibility problems.

3.4.2 Iteration

The principle of iteration, also known as a repeated game involves multiple rounds of interaction between two or more actors. This differs from a once-off game. In a once-off game, actors only interact in one round of play. Repeated games are better suited for large dam investment cooperation because projects span over a lengthy period and uncertainty is a constant. Actors need to repeatedly interact to monitor compliance, incentivise commitment or punish defection all of which require continuous adjustment in strategic behaviour and preferences.

Strategically self-interested actors can achieve almost any form of mutually beneficial cooperation in repeated games. Since large dam investment collaborations take a lengthy period to materialize, a credible commitment is pivotal to a successful outcome. This is because, within such long-term cooperative initiative, investors are repeatedly interacting with each other; this, in turn, influences their strategic rational behaviour. Interaction here is characterized by monitoring compliance, punishing defection, compromise and predicting the other actors' move. In a repeated game, the behaviour of both actors is mirrored to a large extent, that is, both actors start out interacting with each other in the first round based on their perception and understanding of the game at play. But in the second round, each actor's strategic behaviour is shaped by the other's behaviour in the previous round. Multiple rounds of interactions between

two or more actors characterize the logic of a repeated game. The behaviour of one actor in the first round determines the behaviour of the other actor in the second round.

For example, consider that the interaction between *essential investors* and the *Nizanaian government* for large dam development pervades different stages of the project life. At the very first stage of the interaction is setting up institutional frameworks and structural adjustments to earn funds for impact and feasibility studies. The former requires capital to set up offices, hire personnel to operate and provide services within the organization, and consult with experts, among other things. How committed the host government is to this phase and its implementation determines whether *essential investors* release funds for the studies. Similarly, the behaviour of the host government at the first stage of the project determines the behaviour of essential investors in the next stage of the project. Hence, both actors are constantly adjusting their preferences and behaviour to make their commitments credible (especially the host government) to achieve an optimal outcome – dam construction and operation.

In a repeated type of social interaction, credible reputation becomes the dominant strategy for all participants, especially the host government. Reputation is a non-contractual mechanism for the governance of transactions between two or more actors (Buskens, 1998). The reputation of one actor or individual indicates to other members within a community or a cooperative initiative the type of beliefs that shape his/her respective perception of the world and behaviour at any given point in time (Bromley, 1993; Wu, Balliet, & Van Lange, 2016). The need to build a credible reputation is one of the major reasons why credible commitment persists thus leading to successful cooperation. In an international agreement (involving two or more international stakeholders), it is in the interest of each participant to build a credible reputation. This is because each actor in the arrangement evaluates and predicts the behaviour of others. When actors behave in ways that promote the collective goal, it is noted by the others, and vice versa (Wu, Balliet, & Van Lange, 2016).

When interaction in the present is marred by the uncertainty of a future time that is, where long-term cooperation is concerned, the uncertainty of the future complicates the social interaction dilemma between the actors. In the face of uncertainty Barclay (2010) recommends that actors should become cognisant to reputation and adjust their behaviour to earn a good

standing with the incumbent cooperating partner and other future possible partners. The argument is that a good reputation from one interaction will be *gossiped* or divulged by third parties to other partners that would likely seek collaboration with an actor (Barclay, 2010). In addition to this, Ruiters (2016) emphasised the importance of "regular contact" to ascertain trust between the actors, and a prerequisite for successful energy cooperation. This, she argues, is essential in mitigating risks and signalling credible commitment to cooperating partners. These arguments are valid in both a once-off and an iterated game. If an actor behaves and earns a credible reputation in the first round of interaction, that reputation precedes him by favouring him among his collaborators. In large dam investment cooperation, the social interaction between stakeholders is iterated and the reputation of the host government becomes pivotal to accessing dam investments.

3.4.3 Institutions

The literature esteems institutions as another way to establish credible commitment in any collaborative social interaction. Institutions are defined as a set of fundamental political, social and legal rules and regulations that form the bases for production, exchange and distribution in an economy (Davis, North, & Smorodin, 1971; Pénard, 2008). The importance of institutions in creating an enabling environment for credible commitment while curtailing the opportunistic behaviour of actors is further reiterated by North (1990, 1993). He adds that institutions are the formal rules, informal norms and the enforcement characteristics of both. Other scholars emphasise the need for a regulatory system or mechanism that guides the behaviour of actors in a cooperative arrangement, serving to incentivise commitment and punish defection. The argument is that institutions aid in constraining the expropriation by actors; they impose constraints on human interaction to structure exchange. By having rules and regulations to guide how actors interact with each other in terms of committing to an agreement over time and space, cooperative initiatives have a higher penchant to achieve a successful outcome. This argument applies to the study of electricity investment cooperation.

In assessing the interaction between institutional endowment of a country and investment in the electric utility industry, some scholars have examined the impact of institutions on investment decision in the energy sector (Begara, Henisz, & Spiller, 1998). Their study found that investments were made in countries that could strongly signal credible commitment against

any unilateral decision-making in a future time, which would negatively impact on the profitability of the firms' investment. To this end, they found that "the existence of several independent constraints on executive behaviour creates a better environment for utility investments" (1998, 19). Drawing on North's (1990) definition of institutions, constraints would imply rules, regulations, organizational structure, contracts and/or signed formal agreements on the terms and conditions within which the interaction may take place. The availability and efficacy of institutions can attract private investment for large dam development.

Private investors are usually wary of sunk asset investments particularly in a context where the political and economic constituencies are lagging. Yet, private investment is crucial to the development and operation of large dam development. Levy and Spiller (1994) explored the conditions under which private investment can be secured for infrastructure development. They posit that regulatory governance is pivotal in combatting prospects of opportunistic behaviour. They concluded that the credibility and effectiveness of a regulatory system (which impacts its ability to secure private investment) depend on the strength of a country's political and social institutions although they differ across countries. They also note that performance can be satisfactory with a wide range of regulatory procedures when there are mechanisms to restrain arbitrary administrative action (Levy & Spiller, 1994). Where large dams are concerned, a contract specifying payment linked to the progress of the work and the penalty clauses for delay can prove efficient in ensuring that host government sees that it is in its interest to credibly commit and stick to the schedule (Dixit & Nalebuff, 1994). North (1990) adds to the argument by emphasising that institutions are created to impose constraints on human interaction to structure exchange. His arguments emphasise the importance of polity in executing enforcement – this he deems necessary for positive economic performance and market efficiency (North 1990). In a nutshell, the presence of institutions conditions the behaviour of actors to act in a way for the greater good of the collective.

Despite the advocacy for institutions, there is an acknowledgement of their imperfection particularly at the time of creation. As earlier stated, uncertainty is a major challenge to cooperation. As relationships evolve against the backdrop of uncertainty, there is a need for constant adjustment of the rules to accommodate the changing nature of events and other

unpredicted occurrences. North (1990) furthers this argument by stating that informational feedback processes where interaction occurs between the actors within the set institutional framework and the resolute punishment of deviant behaviour all help in (re)shaping institutions to achieve credible commitment. Also, institutions are not necessarily created to be socially efficient because they tend to promote the interests of those who created them (North 1990). As a result, the context within which they emerge is important in understanding and addressing credible commitment problems.

Furthermore, scholars like Spiller (1995-1996) have refuted the use of contract as an effective credible commitment instrument. He critiques a contract-based regulation claiming that is it highly susceptible to unilateral amendment by governments, thereby introducing complexities into the regulatory system. In his assessment of commitments through (formal) contracts within utilities, he finds that the independence of the judiciary and treating of licenses as contracts are fundamental in ensuring that contracts are effective in constraining opportunistic behaviour (Spiller, 1995-1995, pp. 493-495). Although his study looks at regulatory instruments such as licensing, necessary to maintain stability in the electric utility industry, the result of his findings applies to large-scale hydropower cooperation that is trans-boundary in scope. He posits that every agreement signed between the host government and multiple stakeholders should be legally binding, allowing for the domestic institutions to be the first point of call to adjudicate issues of reneging. This way, disputes would be readily resolved, considering that the processes and outcomes of arbitration are autonomous. But he acknowledges that this level of independence is only achievable through the consolidation of norms over time.

Axelrod & Keohane (1986) note that the political underpinnings of economic expansion or security often complicate the outcomes of cooperation. Considering that global politics is shaped by a rich variety of context, it is important to assess the importance of context in shaping the behaviour of actors in a cooperative arrangement. “Issues arise against distinctive backgrounds of experience; they are linked to other issues being dealt with simultaneously by the same actors; and they are viewed by participants through the prisms of their expectations about the future” (Axelrod & Keohane 1986, pp. 227). Also, the political context within which each actor exists/functions and subscribes to has an impact on cooperation.

As a result, some scholars have resorted to domestic politics and regime type to understand and resolve credible commitment problem (Cowhey, 1993; Fearon, 1994; Gaubatz, 1996; McGillivray & Smith, 1998; and Leeds, 1999). They argue that a democratic Leviathan is more likely to achieve a positive cooperation outcome than other government systems. Leeds (1999) examines the influence of domestic political institutions on the ability of leaders to establish successful bilateral cooperation in the international system. She argues that the variance in domestic institutional endowment affects the degree to which actors can credibly commitment to international cooperative initiatives. To this end, she posits that a commonality among actors underscored by a shared political ideology – democracy or autocracy – necessitates some level of cohesiveness on the principles forming the basis of the cooperation initiative. This implies that when democratic dyads cooperate with countries with the same principles, or, when autocratic dyads cooperate with those who share similar values, cooperation is more likely to achieve a successful outcome as opposed to a cooperation with a combination of both dyads (Leeds 1999).

Owing to the shared ideology between the actors, there is an assumed understanding of the type of (regulatory) framework that would guide the interactions between the actors. For instance, cooperation between democratic dyads, there is a mutual understanding of prioritising the importance of institutions and the need to abide by them over pursuing self-interest thus reneging on the agreement. Also, there is a mutual understanding that cooperation is largely for the benefit of the domestic populace who act as accountability mechanisms for the government. Where in a democratic dyad, the domestic audience cost for reneging or slow implementation of international policy implies that the government may likely lose their political seat, keeping the government in check where international cooperation is concerned. This familiarity among democratic dyads makes them behave in ways that would facilitate cooperation rather than deadlock or a total breakdown.

Drawing on this, the consensus in the literature lends towards the argument that democratic states are more likely to achieve successful cooperation on a regional/international level than non-democratic states. The assumption that democracy equals strong institutions is largely insufficient emphasises the role of institutions as check-and-balance to the activity of the government. On a regional and international level, the same principle becomes easily

applicable as it is imbibed in how the respective states function on a national level. As ideals and ideologies are similar, these cooperating states are more likely to approach the challenge with a similar strategy. It is often circumstantial that two or more states approach governance from the same standpoint. While the goal may be the same, the means to the end differs. For example, two states may practice the principle of democracy but the understanding and application of the concept to their respective jurisdictions may differ. For example, parliamentary system versus federal system; annual elections versus four-year terms; and multiparty competition versus a one-party system.

On a supranational level, Fang & Owen (2011) examined the extent to which international institutions can incentivise non-democracies into making a credible commitment. Their study found that international institutions in providing information about uncooperative behaviour combined with the ability of international audiences to punish any exposed bad behaviour, both served as a credible commitment device to lock non-democracies into commitment. This argument unequivocally postulates that regime type is central to credible commitment where the need for institutions to monitor and punish defectors are lesser in democracies compared to their non-democratic counterparts. Fearon (1994, 1997) argued that in an international conflict a commitment may be credible if it creates the possibility that leaders will become locked in their position and will not be able to back out due to significant costs associated with reneging. In other words, for a government to credibly commit to a policy before domestic and international audiences, its ability to generate costs associated with reneging is critical (Fang and Owen 2011).

3.5 Conclusion

This chapter began by explicating the challenges of credible commitment and its applicability to large dam investment cooperation. It emphasised that credible commitment is defined as the willingness to be committed or bound to a course of action or inaction. And, where there is a failure to indicate this willingness to other parties within a cooperative initiative, credible commitment problems emerge. These problems take the form of cynical commitment issues, time inconsistency, and the lack of a supranational authority to act as a credible enforcer of an agreement. Following the explanation, a simulation depicting the relevance of credible commitment challenges in large dam investment cooperation was discussed. It emphasised how

actors who converge for a common purpose often have divergent interests. However, compatibility in their respective interests and their willingness to consciously choose strategies that tend towards the collective goal is crucial in strengthening their credible commitment signal.

In large dam investment cooperation, credibility problems exist mainly owing to uncertainty and human nature. But factors such as the number of fragmented actors participating in the initiative, characteristics of investment decision making and mega projects, the nature of the electricity sector and its associated costs, altogether account for the existence of credibility problems in large dam investment cooperation. The arguments in the literature on how to evade or at least minimise these problems were categorised into three mainstream themes namely interests, iteration, and the role of institutions.

Studying the political economy of large dam investment in Africa through the lens of the credible commitment problem offers a fresh perspective on the subject matter. An understanding of these issues allows for an in-depth assessment of the factors that motivate or hinder credible commitment by the host government, to access international funds for project development. While credible commitment challenges pervade the different aspects of water-for-energy partnerships, the focus of this study is on the dynamics between the host governments and financing investors. I examine the recommendations in the literature using the Cahora Bassa dam and the Inga dam project as case studies to draw inference on large dam investment cooperation in Africa. The completion and operation of the Cahora Bassa suggest that the collaborating parties were able to effectively manage credibility problems and the reverse is the case with the Inga project. The next chapter discusses the Cahora Bassa case study to ascertain the nature of credible commitment problems and how they were resolved.

CHAPTER FOUR: THE CAHORA BASSA DAM

The Cahora Bassa dam is one of the major dams harnessing the water resources of the Zambezi River in Southern Africa. The Zambezi River flows through six countries in the region namely Angola, Botswana, Mozambique, Namibia, Zambia and Zimbabwe. It has been an important source of food, transport, and most notably for this study, hydroelectricity generation. The Cahora Bassa dam is in the Tete province, in the Northern part of the Republic of Mozambique. The construction of the dam began in 1969, a period that coincided with the wave of decolonisation in Africa. By 1974, the dam was completed but only became fully operational from 1979 (Xiong, 2014). The dam has an installed capacity of 2075 MW of which 1355 MW is exported to South Africa through its power utility, Eskom (Fair, 1987). It comprises of a storage dam on the Zambezi River, a hydroelectric power station and two transmission lines carrying power over an approximate 1400 km to the Apollo distribution station near Pretoria in South Africa. While South Africa receives a bulk of the electricity, Mozambique's Electricidade de Moçambique (EDM) and Zimbabwe's Electricity Supply Authority (ZESA), are also beneficiaries (World Bank, 2010)[4].

The project represents a legacy of colonial history between Portugal, South Africa, and later, Mozambique. The Cahora Bassa dam was negotiated and implemented at a time when Mozambique was under colonial rule. Countries such as Britain, Portugal, France, and South Africa scrambled to increase territorial acquisition in Africa. At that time, the acquisition of territories was synonymous with political and economic power. The scramble for territory in Africa between Britain, France, Portugal and South Africa led to intense competition between these states. In Southern Africa, the competition was between South Africa, Britain and Portugal. With most of the territories occupied by Britain and South Africa, Portugal often anticipated an encroachment in its colonies by either of its rivals. The Cahora Bassa dam would

[4] According to the report by the Economic Consulting Associates for the World Bank (ECA 2010, 1-2), "The current situation is one in which HCB is being operated at full capacity to satisfy markets in South Africa, Zimbabwe and Mozambique itself. The bulk of HCB firm energy goes to Eskom (around 55% or 1,150 MW). This includes an allowance of 300 MW that is sent back to EDM via the buy-back arrangement whereby Eskom supplies Maputo with power. Other direct HCB customers are EDM in central and northern parts of the country and the Zimbabwe Electricity Supply Authority (ZESA). A small amount also goes to other southern African utilities that belong to the Southern African Power Pool (SAPP). These other customers share the 925 MW not committed to Eskom, with only a portion of this being supplied on a firm basis."

become the basis upon which the apartheid government in South Africa and the Portuguese colonial administration in Mozambique would build stronger relations in time for the hard-line security issues that emerged with the wave of decolonisation. The interaction between these parties would give rise to different forms of credible commitment problems with the struggle for independence putting the credibility of their commitments to the development of the Cahora Bassa dam to test. Amidst the scramble for territory, the apartheid government and the colonial administration in Mozambique built a strategic alliance through informal trade relations that quickly strengthened with the development of the Cahora Bassa dam.

This chapter examines the challenges of credible commitment in the Cahora Bassa case study and it is divided into two parts. Part one examines the geopolitical dynamics of Southern Africa from the mid-1950s through to the 2000s. The narrative is divided into epochs to capture the political climate of each era namely mid-1950s to 1969 [formation of the Missão do Fomento e Povoamento do Zambeze (MFPZ), negotiations for the financing and construction of the dam, and the beginning of project implementation], 1970 to 1990 (the wave of decolonisation and its implications on the Portuguese colonial administration) and 1990 to 2000s (reclamation of full ownership of the dam by Mozambique, disputes on electricity pricing between Mozambique and South Africa). The chosen periodization of the project is owing to the political events that characterised each period. The style of periodization is deemed suitable for this study because the Cahora Bassa scheme had stupendous political undertones. The project largely represents South Africa extending its sphere of influence from Limpopo to the Zambesi (World Council of Churches, 1971).

Part two examines the political economy of the project. It identifies the economic cost of the project, the key actors, their respective interests and financial contributions to the project. It examines the role of these political and economic factors in shaping cooperation outcomes. These interactions are studied using the theoretical framework of credible commitment to deduce the nature of the credibility problems and the mechanisms employed to address them.

Part I: Historical context of the Cahora Bassa Dam

The Cahora Bassa dam narrative is intrinsically linked to the political history of Mozambique in Southern Africa. This section discusses the historical account of the dam (from conception

to operation) vis-à-vis Mozambique's political history. It outlines the political developments that laid the foundation for the credible commitment challenges that emerged. It begins by situating Portugal in Mozambique and in the sub-region of Southern Africa. Subsequently, the dam narrative is categorised into three epochs namely mid-1950s to 1969, 1970s to 1990, and the 1990s to the 2000s. Although each period portrays a different aspect of the dam's history, they all cumulate into identifying the challenges that emerged vis-à-vis the dam. The historical account begins with the politics around the conceptualization of the Cahora Bassa project, including the negotiations and the birth of the Frente de Libertação de Moçambique or the Front for the Liberation of Mozambique (FRELIMO). It goes on to discuss the liberation struggle and the implication on the Cahora Bassa dam project as well as the subsequent independence of the state of Mozambique. Following this, the incorporation of the independent state into the dealings of the Cahora Bassa project and the dispute over pricing and distribution that ensued between the apartheid government, the Mozambican government and the HCB (by extension, the Portuguese colonial administration), will be elaborated on.

4.1 Situating Portugal in Mozambique and (Southern) Africa

In situating Portugal in Southern Africa and its respective colonies, it is inevitable to discuss this narrative with some level of comparison to the apartheid regime in South Africa and the British colonial government. The geopolitics of the Southern Africa region was characterised by threats of expansion and subsequent negotiations leading to agreements; these aimed at recognising and respecting the territorial authority of the respective colonial powers.

Portuguese exploration of the African continent dates to the fifteenth century but it only actively partook in the scramble for Africa towards the end of the nineteenth century. The origin of Portugal's expedition into Africa was what is today known as 'international trade'. In search of oriental goods to purchase, Portugal explored the Atlantic coast of Africa where it bought goods like pepper and slaves (Henriksen 1973; McKenna 2010). As other European counterparts began their expansion into Africa towards the end of the nineteenth century, Portugal penetrated the inland through the coastal region to settle in countries like Angola, Mozambique, Sao Tome and Principe, Cape Verde and Guinea-Bissau. Studies show that it was only in 1918 that Portugal successfully claimed the Mozambican territory (World Council of Churches, 1971). Although Portugal was one of the first colonial powers to explore Africa,

its control over territories in Southern Africa only solidified after others had initiated the 'scramble for Africa' (Minter, 1972). Thus, Portugal became an active player in a Southern Africa region dominated by Britain and the Union of South Africa.

Territorial disputes and gold formed the basis of the relationship between South Africa and colonial Mozambique. The 1800s saw several territorial disputes between both regimes. Since the 1830s, the tension between Portugal and Britain had been accumulating as the latter continually threatened the interest of the former in terms of territories in Africa, because territories translated into political and economic power (Correia & Verhoef, 2009). Records show that the Delagoa Bay or the port in Lourenço Marques was sought after by South Africa (Katzenellenbogen, 1982). They claimed that Portugal did not maintain active control over the region and thus sought to encroach. Portugal's fear of a possible co-optation of its territories in Southern Africa by either Britain or the Union of South Africa was unwavering. For one, the colonies of Angola and Mozambique shared borders with British-run Rhodesia (now Zimbabwe) and Afrikaner-led South Africa (Farley, 2008). This fear led to a British agreement to acknowledge and respect the Portuguese territorial claims in the region. But by 1858, both governments, that is, the apartheid government of South Africa and the Portuguese colonial government officially recognised their respective autonomy and territorial jurisdiction to preside over the affairs of its colony (Katzenellenbogen, 1982). This was the origin of a closer relationship between both parties. For instance, following the discovery of gold in the Witwatersrand, labour was required to exploit the resources (Vail, 1982). Mozambique served as a source of this labour, further strengthening cooperation between both governments (Marks, 1999).

At the start of the twentieth century, Portugal experienced political difficulties that would not only weaken its position within its empire in Africa but also consolidated the 'weak colonial authority' perception of its counterparts (Farley, 2008). By 1928, António de Oliveira Salazar ascended to power through a military coup and within a few years, established himself the undisputed leader of the country. He created the 'Estado Novo' or 'New State' doctrine in 1933 (Farley, 2008). This new state was characterised by authoritarianism and modelled after Italy's Mussolini's fascist state (Farley 2008; World Council of Churches 1971). The doctrine of the *new state* was applied both in Portugal and in its colonies in Africa. Under the new governance

model, the rights and private needs of individuals became subservient to the needs of the society as represented by the state (World Council of Churches, 1971). This regime type is known as 'corporatism' – where the liberties and interests of individuals were subjected and aligned to those of the nation-state (Portugal). Within this system, participation in political, economic and social activities was regulated by institutions or organizations approved by the state; the individual free will was non-existent. The goal was to "ensure harmonious relations between all the sections of society and thus avoid the scourge of capitalist destructive competition and the plague of the communist class conflict" (Seleti, 1990, pp. 53-54).

Portugal's colonies were organized under the Overseas Province – a political designation is given to African colonies to preclude them from United Nations (UN) resolutions and sanctions on colonies. The colonies functioned as a market for Portuguese goods and a source for raw materials for Portuguese industries (Meneses, Rosa, and Martins 2017). Even though their African colonies enjoyed autonomy, the survival of Portugal's economy was highly dependent on its African colonies. Economically, most Portuguese colonies were organised into an 'Escudo zone' – a strict monetary system that deterred foreign loans. It gave Portugal autonomy over the political, economic and financial management of the colonies (D'Orfeuil 1953; Seleti 1990). This implied that any foreign investments or exchanges had to go through Portugal to the respective colony. The principles to be adhered to in the administration of the Portuguese colonial empire were defined by the Colonial Act of 8 July 1930 drawn up by Salazar (Seleti 1990).

All these issues lent credence to the perception of Portugal as weak and incapable of maintaining authority in its respective colonies. McKenna argues that there were recurring military campaigns or police actions almost annually between the years 1875 and 1924 (McKenna, 2010). Resistance owing to the harsh policies implemented by the Portuguese colonial government were recurrent. For example, troops used to maintain law and order in the colonies constituted of local black African people enacting Portuguese colonial laws on their countrymen – as if they voluntarily sided with the colonial government (Funada-Clasen, 2012). As a result, every attempt at these law enforcement officers in implementing harsh colonial laws witnessed resistance from the people – their countrymen and women (McKenna, 2010). Other contributing factors to the resistance include harsh tax and labour policies, the

fragmentation of political authority and the potential threat to undermine traditional elites and norms by colonial rule (Funada-Clasen, 2012). To the British and apartheid colonial governments, the recurring acts of resistance in Portuguese colonies was an indication of Portugal's inability to maintain control over the African constituents in its respective colonies. One can argue that this phenomenon heightened the colonial counterparts' sense of awareness and possibly anticipated a spill-over effect considering that their colonies bordered the Portuguese colonies. To prevent a spill-over effect, encroachment into the Portuguese colonies would seem rational, but never formally occurred.

Despite the competitive and tensed relationship between the apartheid and the Portuguese colonial governments, cooperation was inevitable. As earlier mentioned, both migrant labourers moved from Mozambique to South Africa to work the gold mines, and partnership on infrastructure construction between both countries had been initiated. This alliance was grounded in the Mozambique Convention (Azevdo, 1980). Other alliances between both governments include a renegotiation of the Mozambique Convention on rail traffic between South Africa and port of Lourenço Marques in Mozambique (now Maputo Port – located in the capital city of Mozambique) in September 1962; in May 1963 they signed an air agreement in Lisbon that stipulated the routes and the number of passengers that could embark and disembark at their respective airports; at the end of 1964, both governments reached an agreement on the joint utilization of the waters of the Kunene River (Correia & Verhoef, 2009). These alliances were merely a way to maintain good neighbourliness – one that would have great benefits for the Portuguese colonial government at a later stage of the wave of decolonisation.

However, both governments differed greatly on the idea of territorial expansion. For the Portuguese colonial government, the establishment of the Union of South Africa indicated at least to them, a confirmation of Britain's interests in Southern Africa. Also, during the First World War, Jan Smuts reportedly compiled a secret memorandum that sought the incorporation of part of the Portuguese territories in Africa into the Union of South Africa. The Portuguese colonial government's fear of expansionism by the Union were articulated by Norton de Matos who was Angola's Governor-General from 1912 until 1915 and Angola's High Commissioner from 1921 until 1923. He perceived the regional policies proposed by South Africa to be a

catalyst for the integration of the sub-region governed largely by South Africa and Britain, with Portugal being excluded. He argued that South Africa wanted to create a United States of South Africa considering that the Afrikaners were willing to extend their influence in the African continent as far as possible (Correia & Verhoef, 2009). Other than South Africa and Britain, the Portuguese were reportedly suspicious of Germany, Italy, and Belgium. Smith (1991) notes that an article in the newspaper, *O Século*, the Portuguese complained that its neighbours alongside other colonial powers in Africa were determined on "demonstrating the intellectual and financial inferiority of the Portuguese" while arguing that the major reason behind such actions was to "lay hold of what is indisputably the dominion of Portugal" (an extract from O Século in (Smith, 1991)).

4.2 Period I: Mid-1950s to 1969

The establishment of the Missão do Fomento e Povoamento do Zambeze or the Mission for the Development of the Lower Zambesi (MFPZ) in March 1957 marked the birth of the Cahora Bassa dam project. This mission was tasked with studying the overall development of the Zambezi basin to ascertain its economic capacity and the associated socio-economic benefits the River can harness for Mozambique (Middlemas, 1975; World Council of Churches, 1971). Together with Hidro-Técnica Portuguesa (HTP) – a Portuguese government advisory board with long-term experience in Hydroelectric works in Portugal, Spain and Africa – the MFPZ released a preliminary report in 1958 followed by a detailed plan for various possible schemes using the basin's resources in 1961. A general plan of action was published in 1965, which set out the priority development projects that could be developed all of which depended on the construction of the Cahora Bassa dam (Mungói, 2011). These projects including the dam were predicted to yield high levels of economic returns for Mozambique.

On the socio-economic front, the plan prioritized the development of the native population to fostering economic and social growth. Consideration was given to develop existing traditional farming and stockbreeding centres and establish the infrastructure needed to bring about development particularly in the energy, transport and marketing sectors (Mungói, 2011). Through the dam, the Portuguese sought to initiate economic growth in Mozambique through industrialisation, mining, agriculture, livestock, fisheries and forestry. These associated benefits formed the basis on which the Portuguese perceived the Cahora Bassa dam as

indigenous and development-oriented. On the flip side, the dam would represent a consolidation of Portuguese authority in Mozambique and by extension, Southern Africa (Middlemas 1975; Isaacman and Isaacman 2013). Although it would encourage indigenous farming and stockbreeding the indigenes would merely be workers as opposed to landowners. The Portuguese sought to occupy and re-demarcate agricultural lands to be distributed to white Portuguese settlers in Mozambique. This would, therefore, undermine any attempt to develop the native community. Moreso, the funds for implementing these *development* projects would be raised by pursuing exhaustive exploitation and extraction of mineral resources in the country for resource rent (Mungói, 2011, p. 83). This implied that indigenes would be used for resource exploitation and production, voluntarily or using force.

Despite these benefits, the colonial government needed Portugal's approval to implement its *development* agenda. The colonial administration in Mozambique had deemed the project congruent with the interests of the Portuguese white minority settlers. For one, the benefits of the project would serve the settlers more than the indigenes. The colonial government had hoped that this advantage was relatively good enough motivation for Portugal to fund the project and also encourage mass migration to Mozambique. In comparison to British settlers, the Portuguese had fewer numbers, which further weakened their positions in Mozambique for instance. Without enough settlers to occupy Mozambican land, resistance from the indigenes was inevitable.

Notwithstanding, Portugal was divided on the issue for two main reasons. The cost of the project was deemed too steep to be spent in an overseas colony. Opponents of the proposal instead advocated for the prioritising of development projects in Portugal to improve the economic and socio-economic (with a spillover in the political) standing nationally and internationally. Also, the proposal to implement the project coincided with a wave of change in Africa as many countries took up arms in pursuit of independence. Thus, the viability of the project in the face of such uncertainty formed the basis of the refusal by opponents of the project. Nonetheless, the proponents of the project cited the benefits to Portugal and the strategic role of the dam in Portugal's political agenda in Africa. The colonial administration was resolved to be a settler colony and thus development project was deemed, to a large extent, the means to the end.

Advocating for the Cahora Bassa *barrage*, the MFPZ had recommended that the cost of the dam and other development projects be funded through electricity trade (World Bank 2009). Since domestic demand for electricity in Mozambique was relatively low at only 75 MW of the eventual 2075 MW, there was a need for a bulk off-taker to purchase for the remainder of the output to generate the required funds. Rhodesia (now Zimbabwe), Malawi and Zambia were considered however, South Africa was the only country with enough demand to sign that magnitude of the power purchase agreement (World Bank 2009, 10). But South Africa had largely been an inward-looking country and to some extent, self-sufficient. The project caused a division in the South African cabinet between the *verligte* faction who were more outward-looking, advocating for more openness towards regional cooperation and integration versus the *verkramptes* who pushed for more self-sufficiency particularly for a crucial commodity as energy (Middlemas 1975, World Bank 2009). The former camp won the argument, and this marked the beginning of cooperation that would later extend beyond electricity trade.

Negotiations for the construction of the project began in the 1960s between Portugal and South Africa. By the mid-1960s South Africa had confirmed its interest in the project, Portuguese engineers had selected a site for the dam and completed some exploratory drilling and excavations (The Department of Foreign Affairs 1984, 13). Leading firms in the UK, USA and on the continent were approached on behalf of the Portuguese government to form consortia that would manage the development of the Cahora Bassa dam. It is reported that negotiations for the project were complicated and the process was marred by high power politics and in-fighting between the contestants for the prize (Olivier, 1975). By 1967, five international groups of companies had indicated an interest in developing the project, from which three consortia emerged. These were: Cabora Bassa Builders consisting of a group of US, French, Swiss, Portuguese and South African companies led by the US firm Morrison-Knudsen, with its headquarters in Paris; Cabora Bassa Construction Consortium – a group of British, Italian, South African and Portuguese firms led by the British English Electric Company, with its headquarters in London; and Consórcio Hidroeléctrico do Zambeze (ZAMCO) – a group of French, German, South African and Portuguese and one Italian and one Swedish firm, led by the Anglo-American Corporation, with its headquarters in Paris (World Council of Churches, 1971). All three consortia submitted their tenders by 10 March 1968 to the following amounts:

Cabora Bassa Builders bid $340 million, Cabora Bassa Construction Consortium bid $248 million, and ZAMCO bid $246 million (World Council of Churches, 1971, p. 13).

The Cahora Bassa project was initialised and progressed under the leadership of Portuguese Prime Minister António de Oliveira Salazar. As of September 1968, Marcello Caetano succeeded Salazar to become the Prime Minister of Portugal (World Council of Churches, 1971). Caetano had a preference for Western states such as the US or West Europe being involved in the development of the Cahora Bassa as opposed to South Africa. But West Germany withdrew from the project citing the "destructive threats from the resistance groups" as well as the Russians and Chinese who staunchly supported them.

Similarly, Caetano had a preference for the American consortium, Cabora Bassa Builders. He preferred greater involvement from the Americans mostly to aid in the prevention of the "leftist liberation movement". He argued that America had a political and military advantage with which South Africa could not compete. Nonetheless, the contract was awarded to ZAMCO - a consortium of companies from South Africa, Italy, France and West Germany - by the Portuguese government (Hidroeléctrica de Cahora Bassa, 2017, p.7; The Department of Foreign Affairs 1984, p.14). By September 1969, the final contract was signed in Lisbon. The contract consisted of four parts: one between the governments of Portugal and South Africa; one between Portugal and ESKOM; one between Portugal and ZAMCO; and one between ZAMCO and ESKOM (World Council of Churches, 1971)

The project would be completed in three stages. The first phase would comprise of the dam and the underground station on the South bank together with three generators of 500 MW each. The converter stations at Cahora Bassa and Apollo, and the two transmission lines over 1400 km, were scheduled to be completed by April 1974. The target date for the second stage, which included a fourth generator of 400 MW, was January 1977 and that for the final stage, which also included a generator to bring the installed capacity up to 2000 MW was January 1979 (The Department of Foreign Affairs 1984, 14). At the same time, a supply contract between the Government of the Republic of Portugal and Electricity Supply Commission of the Republic of South Africa was signed in 1969.

The key events that underpinned this period were the birth of the mission to study how beneficial the project would be vis-à-vis the socio-economic development of the populace. But the variance between the benefits and the cost of constructing a dam of that magnitude quickly caused a division in Portugal's administration. Alongside this cost-benefit analysis was the growing anti-colonial sentiments spreading across the globe where colonial administrations were criticized as an incentive to discontinue colonialism. Since the benefits would not only improve the living standards of the population in Mozambique particularly the white settlers, it would also represent the Portuguese colonial government's claim to the colony of Mozambique. This implies that the Cahora Bassa dam was more than a development project, it carried with it regime security undertones.

To offset construction cost, the Portuguese colonial government sought to exhaustively explore and exploit the natural resources in its colonies and, sell the bulk of the electricity produced to a befitting buyer, the apartheid government. Talks between both governments[5] began and by 1969 both signed a supply contract outlining the responsibilities of each government concerning dam construction and operation. It also stipulates the terms of supply between both parties including pricing and distribution (Ministério do Ultramar 1969). Although both parties had a target completion and operation date, the events that occurred from the 1970s to the 1990s would delay that plan. For one, the birth of FRELIMO and the launch of an arms-struggle against the colonial government contributed to temporarily halting construction plans.

4.3 Period II: 1970s – 1990s

By the start of 1970, the liberation struggle was well underway in Southern Africa, threatening the existence of the Portuguese colonial administration. At the same time, construction of the Cahora Bassa dam was also in progress irrespective of international opposition to the project. The Cahora Bassa dam represented two key security dimensions to the Portuguese. First, they hoped the project would limit guerrilla advances to the south of the Zambezi river, if the lake behind the dam would relatively hinder easy access by FRELIMO forces to the heart of Mozambique from their respective bases in Zambia and Malawi. Also, they assumed that the

[5] At this point, the Portuguese colonial government and the government of the Republic of Portugal had an aligned interest in negotiating with South Africa to be the main buyer of the electricity output. Their interests were homogenous and therefore acted as a unitary actor in this case.

project would motivate and increase white settler community in the country especially many former soldiers, to provide the first line of defence against exiled African guerrillas (Isaacman 2001, 206). This was not the case. Investors from Portugal, especially private investors were too concerned about the risk of investing in an overseas ministry when the colonial administration was encountering challenges containing the liberation movements (Isaacman 2001). Also, there was little evidence of mass settlers moving to Mozambique where malaria was prevalent. As a result, three was a rethink of the economic viability of the project.

As an anti-colonial strategy, FRELIMO was adamant about vandalizing the dam. In 1968, they had launched the first line of guerrilla attacks in Tete in 1968 and were beginning to get support from newly independent African states and the international community. This proved problematic for the Portuguese in getting Western funding for the project. For example, the Italian and Swedish companies withdrew their support for the project as a result of the international call for the independence of colonies (Isaacman 2001, p. 207). In Mozambique, FRELIMO continued to launch attacks on the Tete province, home to the Cahora Bassa dam. They attacked bases set up by the Portuguese to limit FRELIMO's access to the region, ambushed trains and Lorries carrying supplies for the construction of the dam and detonated strategic roads and bridges (Isaacman 2001, p. 209).

As the struggle for independence gained international traction, companies within ZAMCO began reconsidering their options. For instance, following the condemnation of the Cahora Bassa project by President Kaunda of Zambia and the subsequent visit to Italy and West Germany urging them to withdraw from the project as a way of proving their anti-colonial sentiments, both countries reconsidered their position on the project. By May 1970, the Italian Embassy in Lusaka confirmed that the Italian government was no longer interested in partaking in the project. The government had previously undertaken to provide €19 million worth of export credits for the Italian firm Societa Anonima Eletrificazione (SAE), which, through its South African subsidiary Powerlines, was a member of ZAMCO. The government's decision did not imply that Powerlines had to pull out of the project, but that it had to find an alternative source of funding for the project. Although West Germany and France initially refused to opt-out of the project despite the UN Committee of 24 passing a resolution calling on all governments to withdraw from Cahora Bassa (World Council of Churches, 1971). But by 1971, General Electric Company of America, other American companies, the Italian government and Swedish companies had withdrawn from the Cahora Bassa project. However, the loss of these

financiers created an opportunity for British firms such as Barclays, United Transport (World Council of Churches, 1971).

Despite FRELIMO's efforts to sabotage the project, the transmission lines were completed a year ahead of schedule in January 1974 and the rest of the project continued until 5 December 1974 (The Department of Foreign Affairs 1948, 15). Following the death of Eduardo Mondlane, Moisés Samora Machel the new FRELIMO leader called for the launch of a general offensive in 1974. The purpose was to coerce Portugal into recognizing the independence of Mozambique (Venâcio & Chan, 1996, p. 20). As Portugal's resources stretched thin to quell similar guerrilla warfare in Guinea-Bissau, many of its troops pulled out of the *war* and refused to fight. This altered the military balance of power in favour of FRELIMO. With a military reluctant to fight, Portugal was losing its grip on its colonies. A negotiated settlement was proposed, and the first round of talks began in June 1974 between Lisbon and FRELIMO. A cease-fire was declared in August 1974 and an agreement for the independence of Mozambique was signed in Lusaka on 7 September. Following this, it was agreed that a joint transitional government would rule Mozambique until FRELIMO formed its government on independence. Resistance to the agreement emerged from the white inhabitants in Mozambique. Labelling themselves as 'dragons of death', they embarked on a revolt, killing thousands of blacks while attempting to take over control of the Lourenco Marques. They called on South Africa to invade the country but Pretoria, being cognizant of further tarnishing its international image, did not intervene in the riot (Venâcio & Chan, 1996, pp. 21-23).

By June 1975, Mozambique became an independent state resulting in the installation of a FRELIMO-led government in the country. The new government, dissatisfied with the 1969 supply contract that allocates a bulk of the Cahora Bassa output to South Africa, decided to launch development project using the dam's output in 1978 (Isaacman and Isaacman 2013). The year 1975 saw the creation of Hidroeléctrica de Cahora Bassa (HCB) and the founding of the independent state of Mozambique. Formed under the protocol signed between the FRELIMO and the Portuguese government, the mandate of the HCB is to generate, transmit and sell the hydropower from the Cahora Bassa dam (HCB 2009). As an Independent Power Producer (IPP), it owns and operates the dam with a long-term Power Purchase Agreement (PPA) with Eskom, EDM and Zimbabwe Electricity Supply Authority (ZESA) of Zimbabwe

to whom it supplies power through an HVAC line owned by EDM (Cipriano, Waugh, & Matos, 2015). The new government, dissatisfied with the 1969 supply contract that allocates a bulk of the Cahora Bassa output to South Africa, decided to launch development projects using the dam's output. The dam was completed and commissioned in 1977.

By 1978, new power stations to transport energy from the dam to Tete and the coalmines in Moatize were underway. And by 1980, the project was completed and began supplying electricity to Tete (Isaacman 2001, 217). Other projects that were proposed using the resources of the Cahora Bassa dam were:

> "[A] plan to use the dam's energy to irrigate more than 210,000 hectares of farmlands in lower Zambesi Valley; also signed an agreement with India to process bauxite at an aluminium plant using power from the dam and a plan to build another set of power lines and sub-stations on the northern banks of the Zambesi – to provide cheap electricity to the agricultural zones Zambézia and Nampula (A.I.M 1981 in Isaacman 2001, 217).

But most of these proposed projects failed to materialize owing to South Africa and RENAMO's role in destabilizing the country.

Shortly after Mozambique's independence, South Africa and Rhodesia (now Zimbabwe) sought to destabilize the new government. As a result, they created, trained and armed an anti-FRELIMO insurgent group called the Mozambican National Resistance Movement (RENAMO) (Isaacman 2001, p. 218). Their mandate was mainly to thwart development efforts by the new government and ultimately, unseat the FRELIMO government. They launched a series of attacks across the newly independent state of Mozambique. Although the dam was left un-attacked, the forces regularly targeted the areas surrounding the Cahora Bassa dam site and occasionally sabotaged power lines and sub-stations (A.I.M. 1980 in Isaacman 2001). But the partnership between the apartheid and the Rhodesian governments would soon come to an end. By April 1980, the independent state of Zimbabwe had emerged to topple the Rhodesian *colonial* government.

Consequently, the apartheid government moved the RENAMO headquarters from Rhodesia to Transvaal in South Africa providing them access to materials needed to execute and sustain the conflict. The first bombing of the power lines carrying electricity from Cahora Bass to South Africa took place on 29 November 1980 (Thomashausen, 1983). The Mozambican government could not protect the 4000 pylons cutting across the country – and by 1981, RENAMO forces had torched the pylons near Espungabera causing a 50% reduction in electricity exports (Isaacman 2001, 219). Even though some of the pylons were later repaired, the RENAMO forces repeatedly sabotaged them and created a fortress near these strategic areas. The attacks aimed to destroy Mozambique's infrastructure, paralyze the economy and cripple any potential for growth and development under the FRELIMO-led government (Isaacman 2001, 218). By the end of 1981, strategic infrastructure such as bridges, oil pipelines (Beira-Umtali) and the port of Beira had been destroyed (Thomashausen, 1983, p. 126). Also, the transmission of power from the dam stopped owing to the extensive damage done to the power lines.

By 1984, the apartheid and the Mozambican government entered into a peace agreement called the Accord of Nkomati. Davies (1987, 6) reckons that the accord was signed in the wake of, and in direct response to, Pretoria's regional destabilization tactics. The tactics were initiated by the apartheid regime following its failure to garner the support of independent countries in the southern Africa region, for the proposed "Constellation of Southern African States" project. It was also a strategy to "soften up" states in the region as a means to launch its economic programs, which would put the apartheid regime as the ruler of the region (Davies 1987, 7). Although the accord addressed mainly security issues, it marked the beginning of a new era of economic relations between South Africa and Mozambique in particular. The agreement would represent a credible commitment mechanism, tying both countries to commit to peace and security but also test particularly the former's credibility as a regional partner. Considering that the apartheid regime supported and funded RENAMO, signing the agreement challenged South Africa's support and funding of the rebel group (Davies 1987, 11). Despite the Nkomati Accord in 1984, RENAMO and FRELIMO were embroiled in conflict post-1984 and the new Mozambican government solicited help from a former supporter of the insurgent group, the apartheid regime (Emerson, 2014).

Also, in 1984, a tripartite agreement for the Cahora Bassa output was reached in the Cape Town Agreement. This agreement saw the establishment of the Mozambique-Portugal-South Africa Permanent Joint Commission (PJC) as well as the revision of the supply contract between HCB, Eskom and Mozambique's electricity utility EDM (World Bank, 2009, 8). By 1988, the electricity tariff agreement between Eskom and HCB had been revised on two occasions (World Bank, 2009, 8).

The key events defining this period were the politics surrounding and leading up to the independence of Mozambique and the major role the apartheid government played. This turn of events initially led the latter to create and fund a destabilization programme, RENAMO, to overthrow the FRELIMO government. A government it believed threatened its regime security – during this time, the African National Congress (ANC) nationalists – sought refuge and aligned with their counterparts in Mozambique to further the liberation struggle in South Africa. But RENAMO quickly became a *prodigal son* and the apartheid government was forced into accepting the newly independent state of Mozambique and its government through the signing of the Nkomati Accord in 1984. The politics of peace laid the groundwork for the completion and operation of the Cahora Bassa dam. Also, the dynamics of the energy trade relationship expanded to include independent Mozambique to the mix of South Africa and Portugal. With three states overseeing the affairs of the supply of electricity, the cooperation challenges in the next epoch were largely underpinned by disputes in pricing and distribution.

4.4 Period III: 1990s – 2000s

The sixteen-year long conflict between the independent Mozambican government and RENAMO rebels came to an end in 1992. The signing of the Permanent Peace Accord consolidated the end of the conflict (Manning, 2002). In the same year, a power supply agreement was signed between HCB and Zimbabwe's electricity utility ZESA. The agreement will see Zimbabwe receive 500 MW of electricity from the Cahora Bassa through a 400 kV AC transmission line (World Bank, 2009, 7). The HVAC line between HCB and ZESA was completed and the export of electricity to Zimbabwe commenced in 1997; the contract was due to end in the year 2003.

Subsequently, in 1995 the Southern African Power Pool (SAPP) was formed and a contract signed between HCB and Eskom for the repairs of the high voltage DC transmission lines (World Bank, 2009, 8). The European Union, South Africa, France and Portugal financed the rehabilitation scheme for Cahora Bassa-South Africa HVDC line; it was operational by mid-1997. The European Union approved an ECU20 million financial package for 250 new towers to replace some of the 1900 towers destroyed by RENAMO during the civil war. The total cost of the rehabilitation project was estimated at ECU152 million – the European Investment Bank provided about ECU20 million, Portugal's Banco de Fomento e Exterior provided EUC17.4 million loan for the supply of electric cables, Caisse Francaise de Developpement (CFD) provided ECU15.1 million for the supply of French-made electric insulators, and Eskom pledged ECU22.4 million for the "supply of towers, mine protective Casspir vehicles, conductor earth wire and hardware" (Misser 1995).

At the power station in Songo, rehabilitation work was financed jointly by HCB of which 82% of the company was owned by Portuguese parastatals and only 18% by the Government of Mozambique. Owing to poor economic indicators as a result of years of war, the government funded the repairs from its resources as well as financial support from the Bank of Mozambique (Misser 1995). Considering that half of the country's electricity consumption is covered by imports from South Africa, Mozambique was forced to import large amounts of electricity from the dam during the civil war. Repairing the transmission lines will improve cash flow to Mozambique, allowing it to pay off some of the debt it had incurred over the years. The rehabilitation of the transmission lines between the Cahora Bassa Dam and the Apollo conversion power station in South Africa was completed by 1997 and in 1998, electricity exports to South Africa resumed fully.

From 1997 through 1999, disputes over electricity tariffs between the Portuguese owned HCB and Eskom ensued. Under the 1974 tariff agreement and as the majority buyer of the Cahora Bassa output, Eskom could decide the terms on which to do business with the Portuguese and no allowance was made for inflation adjustment in pricing (van Huyssteen, 1997). An additional 750 MW of electricity was due to be transmitted to the South African power grid and Eskom offered to pay US$0.2c/kWh. The Portuguese wanted more money for the output; they hoped that by increasing Eskom's tariff, they could pay for the project's estimated US$3.2

billion debt (Chalmers, 1998). According to Van Huyssteen (1997), Cahora Bassa was put on the market for US$3 billion even though it was built for about US$510 million. Eskom's refusal to pay an increased tariff is anchored on the argument that they were the "world's cheapest power generator and is selling its power to the local market at about US2.5c/kWh on average" (van Huyssteen, 1997, p. 1).

The then energy advisor for Eskom, Bain McIntyre argued that Eskom had enough surplus capacity to last till about the year 2006 to 2010, as well as other cheaper option outside the Cahora Bassa. He argued that it did not make financial sense for Eskom to pay $1500/kW for an old dam when it has the potential option to pay $1000/kW for a new power station to be built on the lower side of the Zambezi called Mpanda Nkuwa (van Huyssteen, 1997). He added further that the DRC's Inga project could provide hydroelectricity at a cheaper and more competitive rate compared to the Cahora Bassa. With these arguments, Eskom tended to have the upper hand in the tariff negotiations. An agreement between the tripartite party of Portugal, South Africa and Mozambique was reached but only covered the period August 1998 to December 1999 due to the instability in the financial market at that time (Chalmers, 1998). By 2002, a dispute over hiking electricity tariffs emerged. The HCB requested that Eskom, the South African utility pay R11.41 for the electricity supplied. The latter refused and insisted on paying the 1969 supply contract price of 2 cents per kW As a result, the former cut off 750 MW of electricity supplied to Eskom (Chalmers, 1998).

By 2007, the Mozambican government negotiated with the Portuguese government to purchase the majority shares in HCB. Both governments signed an agreement to this effect – Portugal sold its majority shares to the government of Mozambique for US$700 million (R5.6 billion). The fund for financing the purchase came through a loan from a consortium of French and Portuguese banks; repayment of the loan will be through HCB's profits (Fauvet, 2012). This agreement meant that Mozambique would own 85 per cent of the HCB shares and Portugal, 15 per cent. By 2012, the Presidents of both countries signed another agreement, which would see Mozambique obtain full ownership of the HCB by the year 2014. The first 7.5 per cent of Portuguese shares will be sold at US$42 million and the other 7.5 per cent would be passed on to the Portuguese company Redes Energéticas Nacionais (REN), which operates the Portuguese national electricity grid. REN will over two years relinquish its holdings in HCB in

exchange for shares in a new company that will operate a new electricity transmission line from Tete province to Maputo. The transmission line known as the Centre-South (CESUL) project is proposed to increase the existing lines and allow for a new hydropower station at Mpanda Nkuwa to be built (Fauvet, 2012). By the end of 2012, Mozambique further increased its holding in HCB to 92.5 per cent, as the Portuguese government sold off half of its remaining shares (Agéncia de Informacao de Mocambique, 2017).

The key events defining this era were: the peace accord entered between FRELIMO and RENAMO plans to rehabilitate damaged transmission lines and the transfer of ownership of the HCB to the government of the Republic of Mozambique (GoRM). Also, Eskom reneged on its commitment to pay an increased electricity tariff for the Cahora Bassa dam output. As a tit-for-tat strategy, the HCB responded by cutting 750MW of supply to South Africa. This led to international arbitration but was put on hold and the issue re-negotiated and resolved.

Part II: The political economy of the Cahora Bassa dam

Political economy fosters an understanding of the interaction between political and economic factors and how they shape the behaviour of actors within a cooperative social interaction. Various kinds of social dilemmas emerge within such interactions; this thesis focuses on the issue of credible commitment and how to resolve them in large dam investment cooperation. This section is dedicated to examining the credible commitment problems that emerged in the Cahora Bassa case study and highlight what mechanisms were employed to address them. It begins with a description of the project to emphasise the magnitude of the dam and the need for cooperation in project implementation. An overview of the cost structure and major financiers of the project will follow. It shows the percentage contribution from each funder – this is necessary to lay the foundations for the cooperation and credible commitment problems that would emerge as a result. This is important because the vested interest of each actor is measured in terms of his or her direct or indirect financial contributions for project development. An analysis of the key actors to determine their respective interests in the dam and, a discussion on the sources of credible commitment challenges and the corresponding mechanism used to address them are provided. Following this, a synopsis of the key arguments raised in this chapter is provided.

4.5 Project description

The dam wall measures 160 metres high and 303 metres wide; the extra height and the greater volume of the Zambezi at Cahora Bassa allow for potential energy supply from two power stations which are nearly four times that of the potential supply of the Kariba stations in Zimbabwe and Zambia (Middlemas 1975, 96-7). Considering the colossal nature of the dam, the rock excavation from the riverbed for the foundations of the dam was about 210,000 cubic meters. The volume of concrete used in the construction of the dam was 450,000 cubic meters with the length of the lake behind the wall being 270 km. The capacity of the dam is 52,000 million cubic metres and the average inflow of water is 2,800 cumecs (Department of Foreign Affairs, 1984). Two cofferdams were constructed – the first was upstream of the dam wall to divert the flow of the river. The second cofferdam was built downstream to prevent the water emerging from the tunnels from entering the dry area where the wall was to be built (Department of Foreign Affairs, 1984). Cofferdams are watertight enclosures from which water is pumped to expose the bottom of a river to enable construction work (Anderson, 2001).

4.6 Project cost structure and financing mechanism

In 1969 money terms, the estimated cost of the Cahora Bassa project was R352 million. Of this amount, South Africa provided about R47 million to fund the South African component of the construction, which included the thyristor converter station at Apollo, and 600 km of transmission lines. The major components of the dam were funded by a combination of export credit, a loan from the South African government and Portuguese private banks (Department of Foreign Affairs, 1984, p. 14). Export credits include government financial support, direct financing, guarantees, insurance or interest rate support provided to foreign buyers to assist in the financing of the purchase of goods from national exporters (Organisation for Economic Co-operation and Development (OECD), 2003). The participating countries (Zamco members) were France (Banque de Paris et Pay Bas), West Germany, Italy (Banca Comercial) and South Africa (Union Acceptances). In addition to this, the Industrial Development Corporation (IDC) and the South African government provided loans to the government of Portugal and the balance was sourced from private banks in Portugal (Department of Foreign Affairs, 1984, p. 14). It is important to note that other sources state that the cost of the dam was estimated at US $517.5 million of which Portugal was liable for US $421 million and South Africa US $96.5 million (Radmann, 1974). Other sources estimate the cost of the dam at US 550 million

(Isaacman & Isaacman, 2013). In this study, I use the figures documented by the Department of Foreign Affairs (1984) as the source of the financial contribution made by the financiers of the project.

The table below shows the monetary contributions made by the actors – it outlines the type of financial contribution made, the monetary value and the percentage of the total contribution. The Cahora Bassa project was ultimately financed by Portuguese government budget appropriations and by credits from a consortium of Portuguese banks and the South African IDC. The project financing structure is illustrated below.

Table 1: Table showing the financial contributions for the construction and operation of the Cahora Bassa Dam

Financier	Type of Finance	Amount of Contribution (ZAR Million)	Contribution (percentage of total)
South Africa	Construction of Apollo power station and transmission lines	47	13%
France	Export credit	63	18%
West Germany	Export credit	63	18%
Italy	Export credit	39.2	11%
South Africa	Export credit	25	7%
IDC and South Africa	Loan	55	16%
Private banks (Portugal)	Loan	59.8	17%
Total		**352**	**100%**

Data source: The Department of Foreign Affairs (1984)

4.7 Analysis of the actors

This analysis focuses on key actors central to the successful construction and operation of the Cahora Bassa dam: the Portuguese colonial government (PCG) and the government of the Republic of Portugal (GoRP), the apartheid government in South Africa and the government of the Republic of Mozambique. I acknowledge that loans for project implementation were

gotten from other state actors like France and Italy, thus the likelihood of potential credible commitment challenges. However, export credits and loans were granted to the government of Portugal and the extent to which they participated in the project was as part of ZAMCO. Collectively, their vested interest was to see the project completed and loans repaid. It did not extend to deeper political issues like regime security, for instance.

The Cahora Bassa dam project was primarily a cooperation initiative between two states – Portugal and South Africa. The demand for electricity at that time in Mozambique was low at only 75 MW of the dam's eventual 2,075 MW. The success of the project was dependent on finding a secure export for the bulk of the electricity that would be produced. Some countries including Rhodesia, Zambia and Malawi were considered but South Africa was the only country with enough demand to sign the sort of power purchase agreement needed to finance the project. On South Africa's side, participating in the construction and operation of the dam was a viewed as an "important and necessary step" in opening itself to the rest of Africa (World Bank 2009).

4.7.1 The Portuguese Colonial Government (PCG) and the Government of the Republic of Portugal (GoRP)

While these two actors are analytically distinct, their interests were closely aligned. The Portuguese colonial government refers to the colonial administration overseeing the affairs of the 'província ultramarina' (overseas province), more specifically, in Mozambique. The government of the Republic of Portugal (GoRP) refers to the administration in Portugal. The overseas provinces were empires of the GoRP and the PCG had the autonomy to govern their colonies as they deemed fit. However, most of the decisions made by the Portuguese colonial government (PCG) had to be negotiated and approved by the GoRP. Despite lacking the coffers to fund the project, the PCG was adamant on maintaining control for three main reasons: prospects of a settler colony, competition and tension in the Southern African region, and the regime security dynamics of the time.

The PCG had a stronger vested interest in building the Cahora Bassa dam than the GoRP. Disguised as a development project, the dam was a means to consolidate the colonial regime in Mozambique, to make it a settler colony. Portugal through the dam project sought to prove

that her rule in her respective colonies was neither stagnant nor conservative, and her seriousness in maintaining the status quo by committing such large sums of money to a *development scheme* in an overseas territory. This was meant to illustrate to institutions like the United Nations (UN), the then newly formed Organisation for African Unity, and the international community that was growing weary of colonial rule, that the strategy of governance was not one of exploitation but of development, given its 'selflessness' and 'generosity' of her investments in the colonies (Middlemas 1975, 26). The hope was that such a project would cause a change in perception of the Portuguese occupation of Mozambique from one of *colonial rule* to one of *growth and development*. The former denotes repression, exploitation and the use of violence in attaining resources and territories from certain groups of peoples while the latter signifies progression in the livelihood of the people.

The dam was pivotal in reducing the tension and competition between colonial administrations in Southern Africa. The PCG was constantly threatened by the belief that the stronger colonial neighbours – Britain and South Africa were looking to expand their territories. Funding a project of this magnitude where at that time, the Cahora Bassa dam would represent the world's largest national hydroelectric project designed with the main goal of exporting cheap energy to South Africa and other neighbours like Rhodesia (Isaacman 2001, 382), would lend credence to their quest. It would show that the PCG was willing to be a *cooperative* regional player in Southern Africa. The alliance that would be formed between the apartheid government and the PCG as a result of the dam was strategic to safeguarding the interest of the PCG. This implies that where nationalist movements threatened to overthrow the PCG and by extension, the energy and regime security of the apartheid government, the latter was bound to intervene to the PCG's advantage. This immediately changed the narrative of 'competition and tension' between the colonial governments to one of security and *development* cooperation. Also, the creation of the Southern Africa electricity grid and economic cooperation implied that the Portuguese colonial government would work closely with British and apartheid government in the region to secure their interests and security in their respective colonies. This partnership would become an attempt to build a white southern Africa barrier against the *rebellion* of black liberation forces seeking independence (Schreyögg & Steinmann, 1986, p. 215). Working together against a common enemy, that was liberation forces across the region, encouraged the PCG to pressure the GoRP into raising the funds for project development.

The interest of the GoRP concerning the dam was to the extent that it generated income to service the expenditures both in Mozambique and in Portugal. Talks and negotiations to develop the Cahora Bassa dam coincided with an uprising in Mozambique and Guinea-Bissau. As a result, the Portuguese government dedicated funds to finance military operations in the colonies (Middlemas 1975). While working with its counterparts in the region somewhat provided assurance and some level of security to Portugal, it did not, however, guarantee a deterrence of territorial expansion by Britain and South Africa. In that stead, it was of utmost importance to Portugal to maintain control over the project – largely, by undertaking the bulk of the financial commitment.

The government could not afford to cover the cost of the project independently; most of the funds had to come from taxpayers in Portugal, many of whom were against the dam initiative and supported decolonization (not for moral reasons, but to avoid the risk associated with investing in overseas provinces). The political climate characterized by the wave of decolonization was said to have undermined any chances of accessing World Bank funds for the initiative and if they were to borrow from external sources, it was unclear how they would repay their debts (Middlemas 1975). Resultantly, the Portuguese government was able to raise the required funds, tapping into its reserves and mobilizing the rest from private banks in the country (The Department of Foreign Affairs 1984, 14). The financing structure will be provided and discussed below.

4.7.2 The South African Government and the Industrial Development Corporation of South Africa Ltd (IDC)

South Africa under the apartheid regime pursued a nationalist and isolationist system. Before the dam initiative, it had been an inward-looking state. The government deemed it *safer* to minimize dependence on other states for resources hence South Africa was self-sufficient in most parts. Becoming the main off-taker for the Cahora Bassa output threatened this isolationist and self-sufficient culture. In 1940, the then vice-chairman of the IDC Dr H.J. van Eck supported the proposal to buy electricity from Mozambique but was met with resistance from the nationalist apartheid government. In convincing the government, the thrust of their argument centred on the increase in domestic demand for electricity and South Africa being a water-hungry country, unlike Mozambique. They emphasized that South Africa's energy needs

by 1980 were likely to be around 21,000 MW, a 200 per cent increase from the 1960s. Also, this would mark the beginning of other cooperative initiatives especially in areas where South Africa was lacking; for instance in water resources. Besides, the emphasis was placed on how important it is for South Africa to take advantage of such reliable but cheap electricity – about 0.3 cents per kilowatt (Middlemas 1975).

Also, South Africa's interest in the Cahora Bassa project had positive economic implications. Due to proximity with the dam site in Tete, South African firms were awarded most sub-contracts to supply surmountable amounts of machinery and materials needed to develop the Cahora Bassa dam. For example, the Chemical Services Group of Johannesburg held the major contract to supply industrial cleaning materials for the project and South Africa was contracted to supply about 65,000 tons of steel for the construction of transmission lines.[6] Also, mining has been the mainstay of South Africa's economy. The South African firms contracted for the development of the Cahora Bassa added value through their mining experiences as well as their specialised drilling and blasting techniques. These were required to create the diversion channels to carry the Zambesi's waters while the dam was being built, and the cavern that housed the electricity generators. Where foreign companies were granted contracts, they partnered with South African firms or had subsidiaries in South Africa to execute the job. For instance, the United States' company Fuller Equipment was sub-contracted for the project. They partnered with their South African agents, Process Projects, to supply cement plants for Cahora Bassa. They built the first cement plant in Dondo, near Beira. (World Council of Churches, 1971) Hence, South Africa's role and by extension, its vested interest in the development of the Cahora Bassa was strategically linked to the politics and economics of influence in the region.

South Africa's interest in the cooperation initiative was primarily energy security. This narrative quickly changed as the wave of decolonization blew across the African continent and the African National Congress (ANC) began its liberation struggle in the country. As the struggle for independence sprung up in neighbouring Southern African countries and energy transmission lines/pylons were targeted by these groups, South Africa saw the importance of expanding cooperation with Portugal and Britain along with security (military) lines. Once,

[6] Johannesburg Star, Weekly Airmail Edition, 6.9.69 in World Council of Churches 1971, p.9.

Mozambique gained independence in 1975 and FRELIMO became the newly independent state government, South Africa's interest in the country (in terms of energy security from Cahora Bassa) was threatened. In response, South Africa funded RENAMO to destabilize the new Frelimo government. When it became obvious that the independent state was not going to be overthrown, Portugal and South Africa had no choice than to negotiate a tripartite agreement that would accommodate the new government even though some terms and conditions were to their detriment. This saw the revision of the 1969 supply contract between Portugal and South Africa, the accord of Nkomati and the new agreement for electricity supply from the Cahora Bassa.

4.7.3 The Government of the Republic of Mozambique (GoRM)

The interest of the GoRM, concerning the Cahora Bassa Dam, has changed over time. Before 1975, it was a nationalist movement FRELIMO, fighting for the independence of Mozambique from the Portuguese colonial administration. At that time, the dam represented a subjugation of indigenous people and the blatant exploitation of their resources to benefit a white minority both within Mozambique and in neighbouring colonies. In that capacity, their vested interest was aimed at sabotaging the project and by extension, any *development* efforts initiated by the PCG. To this end, the movement ambushed and hijacked resources in transit, needed to aid project implementation. Despite this, the actual dam structure was not targeted – one could argue that they saw the need and profitability the dam could afford them after reclaiming their territory from the Portuguese. Shortly after independence, they were dissatisfied with the fact that the bulk of the output produced by the Cahora Bassa Dam was sold to Eskom; and that Mozambique who produces the electricity has to buy the output back from Eskom. As a result, the government saw it necessary to unilaterally change the terms of the agreement allowing for the aforementioned to take place.

Although the GoRM did not financially contribute or invest in the construction of the dam, under independence they got a seat at the table. Their interest became closely aligned with that of the apartheid government. That is, both saw the need to rehabilitate and rebuild infrastructure damaged as a result of the conflict between the government and RENAMO. Both the GoRM and the apartheid government had a vested interest in getting the dam operational again (for South Africa, under the terms of the initial power purchase agreement). After the GoRM bought

majority shares of the HCB from the Portuguese, it became strategic to the former that it earns more rent from the sale of its electricity. As a result, disputes on electricity tariff saw the Mozambican government renege on the supply agreement with Eskom – creating credible commitment challenges. The next section addresses in detail the sources of credible commitment problems in the respective periods and what mechanisms were employed to address them.

4.8 Credible commitment problems in the Cahora Bassa dam

In this section, I re-visit the core tenets of credible commitment (problem) as an analytical framework. Following this, a discussion of the investment decision-making process between the apartheid government and the Portuguese colonial administration will be provided drawing on the narrative documented above. This informs the preceding discussion on why credible commitment problems emerged in the case study as well as their respective forms, across the three epochs. Considering that the dam was completed and remains operational, this indicates that credible commitment was successfully established. Thus, an assessment of the mechanisms employed to address the credibility problems that emerged including their effectiveness will be provided. This assessment explores the fit of the arguments made in the literature on how to establish credible commitment, using the Cahora Bassa dam as a case study.

Commitment means the willingness to follow through on a particular course of action or inaction. It depicts an actor's persistence in choosing strategies that lead towards a set goal (Ghemawat, 1991). Commitment becomes credible when an actor can persuade others that the identified course of action or inaction will be followed through (Schelling, 1980). Hence without this persuasive element, commitment is not deemed credible. Resultantly, commitment problems emerge when actors fail in persuasive communication and in their ability to commit to a promise or a threat. This problem can take three different forms. It can be a cynical commitment problem where the actor pledges to commit but has no intention to follow through; a time inconsistency problem where the actor pledges and signals commitment but it becomes rational to renege at a later stage; and the lack of a credible enforcer to incentivise credible commitment and punish defection (Simmons & Danner, 2010).

4.8.1 Mid-1950 to 1969

In this era, the main credible commitment problem is characterised by time-inconsistency issues. It occurs when an actor alters its preferences and actions at a later time for any given reason. This problem emerged in this era because of the uncertainty surrounding the fate of the Portuguese colonial administration in Mozambique, owing to the onset and intensification of anti-colonial movements in its respective territories. As the nationalist movements became radicalised and engaged in violent uprisings, the Portuguese became focused on containing the movement thereby deploying resources to do so in all its African territories. However, the instability in the colonies especially in Mozambique threatened the colonial administration's prospect of meeting its commitments to South Africa in terms of electricity supply from the Cahora Bassa dam. Thus, uncertainty resulting from the struggle for independence threatened the energy partnership between colonial Mozambique and the apartheid government of South Africa.

The prospects of dam completion and operation were compromised as the liberation movement in Mozambique gained traction. Violent uprisings were looming over Africa following the emergence of the wave of decolonisation in the 1950s. Portuguese territories in Africa were no exception. In Angola, by February 1961 resistance to colonial rule had emerged. It quickly spread into Guinea-Bissau and Northern Mozambique (post-1964 FRELIMO uprising). Studies show that it cost Portugal about 2540 million escudos per annum, which was "3 per cent of GNP, 20 per cent of all public expenditure and almost half the projected cost of the Zambezi scheme" to contain the resistance (Middlemas 1975, 22-23). By June 1962, liberation fighters Samora Machel and Eduardo Mondlane played important roles in the formation of FRELIMO. Their main objective at that time was to fight for and attain the independence of Mozambique from Portuguese colonial rule (Machel, 1974). With the Portuguese colonial government resisting and attempting to curb any nationalist movement, FRELIMO launched an armed campaign in Northern Mozambique in 1964. This struggle set the tone for the intensification of the fight against colonization. In resisting, the Portuguese colonial government with the assistance of the mother country responded with the major military efforts. Although they were able to cripple the movement for a brief moment by assassinating its President, Eduardo Mondlane, it only served to intensify the desire to topple the colonial government (Middlemas, 1975).

Also, the fate of the project was further put in jeopardy when FRELIMO began targeting the Cahora Bassa dam site from 1964. Although the project itself was untouched, resources and expertise required for project implementation were ambushed and targeted. Such actions served to undermine colonial Mozambique's commitment to electricity supply as agreed through the 1969 power purchasing agreement. Given these events, South Africa as the designated major off taker had two major concerns. First, they were concerned about a potential spill over effect in the liberation movement. This concern was validated with the emergence of the Mkhonto we Sizwe. South Africa was concerned that the guerrilla attacks in Rhodesia and Mozambique included members of the ANC. It became rational to protect its borders through the use of military arsenal and cooperation with neighbouring colonial regimes (Meneses, Rosa, & Martins, 2017).

Secondly, they were concerned about the failure by the colonial administration in Mozambique to manage its internal affairs vis-à-vis the Cahora Bassa dam. According to press reports released in 1971, the Portuguese colonial administration admitted to FRELIMO's successful operation in Tete – the site for the construction of the Cahora Bassa dam. As a result, a South African company – COMOCMIN – withdrew its prospecting teams from the Tete district as the Portuguese authorities could not guarantee their safety[7] (Star 1971 quoted in Radmann 1974). The launching of guerrilla attacks in Tete and the subsequent disruption of efforts to prepare the dam site signalled to the South Africans that the project might not materialise. Assessing the situation from a South African perspective shows that every effort and expenditure made by the Portuguese colonial government in an attempt to curb liberation struggle movements only served to help them gain momentum. This, if not acted on, would become a threat to the apartheid government's regime in South Africa.

Another indication of the apartheid government's concern is in the time frame between their indication of interest in 1961 and the signing of the power purchasing contract in 1969. The major event that occurred in Mozambique within this time frame in relation to the Cahora Bassa was the attacks on resources needed for the development of the project. From a South African

[7] Star, Johannesburg, 30 October 1971.

perspective, the prospect of the project materialising was bleak. The intensification of the uprising was a clear indication of the shortfall in the Portuguese ability to contain the rebellion. And, attacks on the dam site resulted in the delay in project development. Thus, I argue that the 8-year period was dedicated to the observation and possibly a rethink of South Africa's interests in the Cahora Bassa project. To the extent that the Portuguese would make efforts to credibly commit, South Africa was willing to do the same.

Although the emergence of liberation movements in Mozambique was exogenous to the colonial administration, it threatened its ability to signal credible commitment to South Africa. The wave of decolonisation which resulted in the violent struggle against colonialism was a factor outside the control of the Portuguese government; thus it was exogenous. If the administration had itself created opportunities to renege on its commitment, then such acts will be considered endogenous to the model as it would be a preference for the colonial government. Therefore, uncertainty about the future events in terms of whether or not the movement would achieve its goal, together with uncertainty about the behaviour of the colonial government in terms of their perseverance in fighting the movement versus succumbing to their demands, both created an enabling environment for time-inconsistency problems to emerge in this case study.

Despite these potential credible commitment problems, the Portuguese colonial administration was vested in developing the Cahora Bassa dam and by extension, making Mozambique a settler colony. While the colonial administration was engrossed in anti-colonial battles with resistance movements, it took strides towards developing the Cahora Bassa dam. Following South Africa's indication of interest in the project, a call for bids was sent out and by 1967, five leading international group of companies had indicated an interest in developing the project, and three consortia were formed. By March 1968, the three consortia submitted their tenders for consideration. It can be argued that these efforts, despite the Portuguese seemingly being involved in a losing battle with its colonial constituencies, served as a credible commitment signal. These strategic moves were effective in persuading the apartheid government that the Cahora Bassa dam would be built despite the challenges. In response, by September 1969, a supply contract was signed between Portugal and South Africa, and Eskom (World Council of Churches 1971; Ministério Do Ultramar 1969). The signing of the contract

in Lisbon was indicative of the apartheid government's dedication to the cause of project development.

In addition to uncertainty, the funding for the project would contribute to the time-inconsistency problem. The cost of financing and the profitability of the project was a bone of contention in Portugal. The estimated cost of the project was R352 million (The Department of Foreign Affairs, Pretoria, 1984). At that time, Portugal's external debts were high. Hence, borrowing more funds to finance the Cahora Bassa project was the least optimal choice. However, this implied that funding had to be undertaken by taxpayers in Portugal many of whom were against the development of the project. Since borrowing to finance Cahora Bassa project would further undermine Portugal's economic standing, the pioneers of *Plano Geral* insisted that private entities should handle the development of all resources in the Zambezi basin. The Portuguese government's role would be to have majority shares in the enterprise and provide the necessary infrastructure to aid project implementation (Middlemas 1975). Notably, the perception of the private sector regarding investing in African territories was unfavourable. Issues around the uncertainty of the colonial administration's stay, the value of such investments against the backdrop of poverty and unemployment in the home country of Portugal, were raised (Middlemas, 1975).

At that time, the World Bank was a major source of finance for large dam projects globally. However, the wave of decolonisation gained traction globally thereby impeding Portugal's ability to source World Bank funds. And, seeking funds from other sources would mean jeopardising its creditworthiness. If Portugal were to borrow from external sources to fund the dam initiative, uncertainty of debt repayment was a major issue (Middlemas 1975). Given the economic challenges Portugal experienced at that time, it was unclear how funds borrowed would be repaid. While the focus of this section is not on Mozambique and Portugal's monetary history, it does form an essential basis to comprehend why the Portuguese colonial government could not initially generate the funds needed to finance the dam independently. As a result, preference for the pursuit of development projects within Portugal, as opposed to its overseas colonies, gained momentum in the Portuguese government.

As a solution to its financial problems, the Portuguese colonial government would consider alternative funding sources for borrowing. The Portuguese wanted to independently finance the project using funds earned from industrialising Mozambique and its other colonies (Sousa Cruz, Guambe, Marrengula, & Ubisse, 2014). For one, demand for mineral resources was on the rise in Europe, Japan and America at that time. Having colonies rich in mineral resources, Portugal considered *aggressive* exploitation of Tete's rich mineral deposits – coal and iron ore to fund the dam project (Middlemas 1975). Also, it could generate additional funds thereby improving the bankability of the project if an offtaker(s) commits to buying the output. According to Hidro-Technica Portuguesa's calculations, 90 per cent of Cabora Bassa's energy could be offered for sale at a price, which even on delivery, would compete favourably in Rhodesia and South Africa (Middlemas 1975, 24). But as colonial wars in their colonies escalated, so did government spending on military capabilities. To offset the cost of these capabilities, Angola's diamond and oil base were exploited in addition to Tete's resource deposits (World Bank 2009, 11). At this point, it became clear that if there was an off-taker willing and committed to buying the 90 per cent of the excess output of the Cabora Bassa dam, it could amortize production cost and fund other development projects on the Zambezi. This off-taker or buyer would be the Republic of South Africa.

The colony of Mozambique was structured to be a major source of raw materials for Portuguese industries, the supplier of cheap labour, the export market for Portuguese manufactured goods, and the labour market for unemployed Portuguese (Sousa Cruz, Guambe, Marrengula, & Ubisse, 2014). Thus, Mozambique as a colony was solely dedicated to the production of agricultural goods but all manufacturing goods were imported from the mother country Portugal. In response to the growing wave of decolonisation, Portugal sought to strengthen its presence in its colonies, especially Mozambique. Between 1953 to 1958, Portugal implemented the first phase of the development plan called 'Plano de Fomento 1953-1958', which aimed to integrate the colonial economy by investing in infrastructure development to improve economic activity (Sousa Cruz, Guambe, Marrengula, & Ubisse, 2014). This resulted in increased urbanisation, making Mozambique more attractive to Portuguese settlers.

In addition to integrating the colonial economy, the Portuguese colonial government worked to further incentivise Mozambique's attractiveness to Portuguese settlers. The second Plano de

Fomento 1959-1964 was designed to achieve this goal. It created additional incentive programmes to improve agricultural outputs in Mozambican river basins, the Zambezi and Limpopo. This resulted in the development of transport and communication sectors to improve the movement of goods and services, and subsequently, exploitation of the hydroelectric potential the Zambezi River basin. Thus by 1961, Portugal invested 635 million escudos for the implementation of this plan. As Cruz et al. (2014) note 12.28 per cent of this fund was dedicated to improving agriculture, forest, and livestock outputs, 8.35 per cent was invested in industrialisation, and only 1.1 per cent was geared towards geological and mining studies of the Zambezi basin. Similarly, the third Plano de Fomento (1968-1973) was geared towards improving the image of the Portuguese colonial government, among other things. This would reduce global pressure for Mozambique's independence. These development plans were successful to a large extent in improving the financial capacity of Mozambique and industrial development benefitted accordingly (Cruz et al., p. 6). Thus, it can be argued that the Portuguese colonial government's position was to maintain rulership over its colonies especially Mozambique given the intensity and dedication to industrialising the country. While agriculture, livestock, forestry and manufacturing in colonial Mozambique were on an upward trajectory, the Zambezi River offered an opportunity for producing hydroelectricity.

Although these economic activities generated capital to fund further industrialisation including the development of the Cahora Bassa dam, military spending to quell nationalist movements depleted the coffers. This would be a potential source of a time inconsistency credible commitment where at the time of appeal to South Africa, the Portuguese were confident in their financial capacity to fund the project. But with the turn of events, it was not rational, at least to the Portuguese government, to pursue the development of a colossal project in an overseas province when decolonisation was highly plausible or in prospect (Middlemas, 1975). An alternative source of funding would be the World Bank which at that time was a major financier of large dam projects globally. But the political climate clouded by calls and pressure for decolonisation undermined the Portuguese ability to access loans for project implementation (Middlemas, 1975). Thus, without finance, the Portuguese colonial administration would have reneged on its commitment to South Africa in terms of its pledge to sell bulk hydroelectricity from the Cahora Bassa dam.

However, the Portuguese were dedicated to alleviating any potential credibility problems that might emerge concerning the project. Cognisant of the financial challenges, the administration considered alternative sources of funding. It was wary of borrowing large amounts of money from South Africa to finance the dam for geo-political reasons previously discussed. To avoid credibility problems in the form of time inconsistency, the colonial administration aggressively exploited the natural resource base in its colonies. At that time, there was an increase in the global demand for coal, iron, and oil. With coal deposits in Tete, the Portuguese colonial administration was soon supplying resources to meet the rising global demand (Middlemas, 1975). For oil and diamonds, the administration turned to Angola, exploiting its resources to meet demand while generating income to fund the Cahora Bassa project (World Bank 2009, 11). This strategy, together with having a committed off-taker willing to pay a pre-agreed price for electricity output served as motivation to persist in efforts tending towards dam development.

In this epoch (the mid-1950s to 1969), the above analysis shows that the credibility problems that emerged were largely time-inconsistency problems fostered by uncertainty and lack of capital for project development. Uncertainty about the fate of Portugal in its African colonies and more importantly in Mozambique threatened the energy cooperation arrangement with the apartheid government in South Africa. However, the strides taken by the colonial administration were useful in renewing South Africa's faith in the feasibility of the project despite political constraints.

4.8.2 1970s to 1990s

By the 1970s to 1990s, the construction of the Cahora Bassa dam was well underway but so was the liberation struggle against colonisation in Africa. Like the previous epoch, the events of this time would create an enabling environment for time-inconsistency problems to emerge save for the political will and commitment of the Portuguese colonial administration. Firstly, the colonial administration exploited its colonies' natural resources to fund industrialisation with the hope that it would incentivise and increase the ratio of Portuguese settlers, especially in Mozambique. This would increase the market share for manufactured goods produced in Mozambique to generate income for project development.

Also, it had hoped that the Cahora Bassa dam would attract investors from Portugal to invest in the development of the project. But as Isaacman (2001) notes, there was no evidence of settler interest in Mozambique owing to malaria and investors were unwilling to invest considering the rise in nationalist movements. The Portuguese government was also divided on the continuation of the project. Portugal had at that time spread itself thin to defend its colonial authority in its colonies in Africa. Furthering the project would mean having to borrow money particularly from an economically buoyant neighbour like South Africa – a strategy the administration was unwilling to exercise. If the administration was unable to source funds for project development, it becomes rational to opt-out of the agreement considering it was becoming politically, militarily, and economically costly for Portugal. But, the Portuguese were resolute in the pursuit of the Cahora Bassa dam project.

Secondly, some companies within ZAMCO began rethinking their strategies vis-à-vis the global call for decolonisation. In the period between 1970 and 1971, major stakeholders in ZAMCO responded to international pressure by withdrawing their commitment to finance the construction of the Cahora Bassa dam. For example, the Italian government had pledged to provide €19 million in credit export for its firm Societa Anonima Eletrificazione (SAE). The SAE was a member of ZAMCO through its South African subsidiary, Powerlines. But by 1970, the Italian government decided to withdraw its funding and requested the company to find an alternative source of funding for the project. By the following year, 1971, General Electric Company of America alongside other American companies, and Swedish companies followed suit by withdrawing their commitment to the Cahora Bassa dam project (World Council of Churches, 1971). The loss of funds for project financing would leave the Portuguese stranded and on the verge of a time inconsistency credibility problem. However, in the same year, British companies such as United Transport and Barclays came on board (World Council of Churches, 1971).

The late 1970s constituted a game-changer to the interaction between the apartheid government and the Portuguese colonial government. Although the transmission lines to carry electricity from the Cahora Bassa dam were completed by 1974, the general offensive attacks launched by FRELIMO delayed the completion and commissioning of the dam. At this point, Portugal had lost its tight grip on its colonies and a cease-fire agreement was negotiated in August 1974.

It can be argued that the nationalist movement was not only concerned about toppling the colonial administration per se, but intrinsic to this, is the opportunity to undo *development* strategies aimed at under developing indigenous groups. As Azevedo (1980) notes, the then vice president of FRELIMO, Marcelino dos Santos, had announced that if FRELIMO successfully toppled the colonial government to gain independence, the main agenda would be to "halt all contract labour to South Africa [and] support terrorist strikes against whites…" (Africa Research Bulletin,[8] in (Azevdo, 1980). Also, they would "break agreements with South Africa on the Cabora Bassa hydro-electric dam project…" (Africa Research Bulletin, in (Azevdo, 1980).

The following month, an agreement establishing the self-determination and independence of Mozambique according to the dispositions in the United Nations Charter and the General Assembly Resolution 1514 (XV) of 14 December 1960, was signed between Portugal and the newly independent government of Mozambique (United Nations General Assembly, 1974). By June 1975, Mozambique was officially an independent state. With a new government in place, the Portuguese colonial administration anticipated concerns by South Africa regarding the supply contract signed in 1969. The emergence of credibility problems, in this case, was as a result of exogenous factors outside the control of the colonial government. To strengthen its signalling of credible commitment, the Portuguese created Hidroeléctrica de Cahora Bassa (HCB) to be an independent power producer (Cipriano, Waugh, & Matos, 2015). Yet, the majority shares of the company were owned by Portugal, 82 per cent precisely while Mozambique was left with 18 per cent (Isaacman & Isaacman, 2013, p. 155)

Despite this effort, the Mozambican government confirmed South Africa's fear of a pending defection on the supply contract. As discussed in the first part of this chapter, the new government was dissatisfied with the terms of the 1969 supply contract with South Africa. Mozambique's economy in the colonial era was structured and to some extent, integrated into the South African economy. Studies show that since 1973, Mozambique had imported wheat, machinery, spare parts, iron and steel, instant coffee, and potatoes (among others) from South Africa. At that time, South Africa was Mozambique's second major trading partner and by 1974, it accounted for 25 per cent of Mozambique's foreign exchange earnings. By 1975, the

[8] Africa Research Bulletin, Vol. 11, No. 6, July 1974, pp. 3159.

same year Mozambique became independent, South Africa accounted for 60 per cent of Mozambique's currency earning and by the end of 1977, it contributed up to 80 per cent (Legum in (Azevdo, 1980). Following independence, the new government had a plan to cut Mozambique's dependence on South Africa as well as improve the socio-economic wellbeing of the previously disadvantaged. It launched a development strategy that sought to redress the ills of colonisation across different sectors of the economy. For instance, in terms of education, most black Africans were illiterate and unskilled owing to anti-educational and racial policies of the Portuguese administration.

In terms of electricity, at that time, Mozambique exported 91 per cent of its electricity to South Africa (O'Keefe & Munslow, 1984). The government viewed this as unbeneficial as such a valuable commodity could be harnessed towards the development of the region. The dam and the unfair electricity trade represented, at least to the new government, another proof of Mozambique's integration and dependence on South Africa. Given this conviction, it became rational for the independent government to renege on the 1969 agreement. After all, it was a deal brokered between South Africa and a colonial counterpart that was no longer in power. As a result, the government pursued the development of new projects that would utilise the electricity output to meet the energy needs of industrial and agro-industrial development as well as its populace. The period between 1978 and 1980, the government had begun erecting power stations to provide the Cahora Bassa dam electricity to the provincial capital Tete and nearby coal mines in Moatize (Isaacman 2001). The defection by the independent government of Mozambique prompted South Africa into supporting efforts to destabilise the new government through sponsorship of the rebels (O'Keefe & Munslow, 1984).

Interestingly, the fact that Mozambique's economy was heavily dependent on South Africa made the independent government's threat a bluff, seemingly. Even at the point of transition from colonisation to independence, South Africa still featured as a major economic partner to Mozambique. Thus "breaking contract labour" would require time, internal restructuring and the pursuit of aggressive inward-looking development policies, to be self-sufficient. For one, the Mozambique Convention of 1909 (which had been revised twice in 1928 and 1930) formed the basis of the economic relationship and inter-dependence between Mozambique and South Africa. However, the Convention was to the disadvantage of the indigenous people. For

example, the Convention stipulated the time frame Mozambican workers can work for – twenty months. And, upon completion of their service, 60 per cent of the miner's wages were remitted to the Portuguese colonial administration and 40 per cent of it was paid in Portugal's local currency – the escudo (His Majesty Stationery Office, 1930) in (Azevdo, 1980).

It can be argued that FRELIMO's threat was only credible to the extent that it drew South Africa to the negotiation table. By threatening to cut off supply to South Africa and following up with projects from 1977 to 1978 to *prove* this bluff was a useful credible commitment tactic. South Africa became aware that this behaviour may persist over a long period if alternative strategies are not considered to foster cooperation as opposed to competition. To this effect, it became rational for South Africa to defect in its collaboration with RENAMO in support of the FRELIMO-led government. While both parties – South Africa and independent Mozambique – had a common interest, which was to foster peace and security in the region, they differed on the strategies to achieve the goal. Negotiations and the subsequent signing of peace accords are indicative of both parties' willingness to put aside self-interest in pursuit of the collective goal – peace and security in Southern Africa.

In this era, credibility problems took the form of time inconsistency challenges complicated by uncertainty. The events of that time characterised largely by the wave of decolonisation put the Portuguese colonial administration in limbo concerning its regime in Mozambique and other colonies in Africa. Unable to manage anti-colonial movements and the toppling of the Caetano government saw a change of strategies by the colonial administration. It had a strong preference for decolonisation over deterrence against nationalist movements. This can be explained by the economic standing Portugal and its overseas ministries found themselves. They had spread themselves thin in trying to engage in a stand-off with anti-colonial movements and could not afford to do so going forward. Irrespective of the challenges that emerged, Portugal was able to make consistent efforts in ensuring the progression and completion of the dam. These were strategies to communicate the colonial administration's dedication or credibility in its commitment to the development of the Cahora Bassa dam. They were successful because, by 1977, the Cahora Bassa dam was completed and commissioned by the HCB where Portugal remained the major stakeholder.

4.8.3 1990s to 2000s

The 1990s to 2000s saw time-inconsistency problems emerging from electricity pricing and tariffs between South Africa and Mozambique. Disputes and subsequent negotiations over the cost of electricity ensued between the HCB and South Africa. A new supply contract was signed in 1988 but remained to the disadvantage of Mozambique. The contract guaranteed South Africa a minimum of 1450 MW of electricity – the bulk of the output. Of this bulk, 200 MW would pass through South Africa's Apollo substation before being resold to Mozambique. This agreement came about as the number of off-taker for the Cahora Bassa output grew to include Zimbabwe and Malawi. However, the electricity tariff on the output resold to Mozambique was higher than the price South Africa bought it for. It is important to note that the actual price of this electricity output remains an issue of confidentiality (Isaacman & Isaacman, 2013). In 1997, the HCB chair complained about the disparity in the price of electricity sold and re-sold (Isaacman 2001).

By 1998, Mozambique's EDM requested an increase in the price paid by South Africa to cover the cost of repairs of the power lines. South Africa, citing the delay in the export of electricity, refused to pay an increased electricity tariff. This was economically costly to Mozambique because they had to import South African-produced electricity to the amount of US $12 million. In the early 2000s, the EDM defected on the 1988 agreement by cutting off the supply of electricity to South Africa after an attempt to get Eskom to pay a higher electricity tariffs. The defection forced both parties to the negotiation table where a new agreement was signed in 2003. It would see an increase in electricity tariff to R3.6 cents per kilowatt-hour. By 2004 both parties entered into an eighteen-year long contract where the price of electricity was pegged at R7 – a rate still cheaper than the price other off-takers pay for Cahora Bassa electricity (Isaacman & Isaacman, 2013, pp. 163-164).

Both parties had an interest in sustaining electricity supply – South Africa benefitted from the re-sale of electricity to Mozambique who in turn benefitted from the sale of electricity to South Africa (and other regional off-takers). With South Africa buying the majority of the dam's electricity output, Mozambique had an interest in making sure that electricity tariff was renegotiated to reflect the current market situation. However, with South Africa initially refusing to reconsider the terms of the supply agreement, Mozambique was forced into

defecting – a form of persuasive communication – on the agreement. Defection became a rational strategy for Mozambique in 2001. Although economically costly to Mozambique, the strategy achieved its purpose.

It is important to emphasise that the credibility problems in this case study encompass the initial stages of dam development through to the completion and operation. At the stage where investments was required to improve the bankability of the Cahora Bassa dam, the Portuguese colonial administration was willing to sell electricity at 2 cents per kilowatt hour (Chalmers, 1998). This was aimed at incentivising the South Africa into committing to buy the bulk load. However, after the dam was built, events of the 1990s indicate that the preferences of the host government changed. The HCB personified by the Portuguese (colonial administration) and the government of Mozambique demanded an increase in the electricity tariffs paid by Eskom. This alteration in the course of action, though justifiable, resulted in time-inconsistency problems. The demand for a hike in electricity prices was warranted because at the time of the initial agreement, the market price was fairly competitive, yet Eskom was charged a price below that of the global market. However, over time, the cost of production and interest repayment increased as a result of inflation; thus, the tariffs earned from Eskom was insufficient to maintain the project with a substantial profit margin.

Uncertainty about the future dynamics of markets and cost justified the demands by the HCB. At the time of the negotiations and subsequent development of the project, there was no way to assert with certainty that the colonial administration will be toppled, or the set price of electricity would be insufficient in a future time. However, as events unfolded leading to the decolonisation of Mozambique, the Portuguese administration had to adjust its preferences to accommodate the precarious times it faced following the independence of Mozambique. Hence, the demand to remain part of the HCB, tie the independent government into undertaking the cost of production (despite not having been part of the decision-making process) and the subsequent need for an increase in electricity prices are indicative of the complexities of uncertainty in an actor's attempt to establish credible commitment.

Having discussed the credible commitment problems characterising each era and why the problems existed, it is important to assess the mechanisms employed to address issues of

credibility. As discussed in chapter three of this study, I categorised the main arguments on how to establish credible commitment into three factors namely interests, iteration, and institutions. This section is dedicated to studying the Cahora Bassa dam phenomenon to establish how well these arguments can be generalised where large dam investment cooperation is concerned. To iterate, the literature on the interests of actors posits that to successfully overcome credible commitment problems, there must be an alignment in the interests of participating actors. It is important to note that alignment does not imply homogeneity in interests but compatibility.

4.9. Establishing credible commitment in the Cahora Bassa case

In large dam investment cooperation, the pursuit of self-interest can be complementary or detrimental to collective action goals. When actors become deceitfully opportunistic, this can undermine efforts towards a collective goal. But, when the self-interests of fragmented actors are compatible with the collective goal, it becomes a catalyst for successful collective action. The potential for self-interest to lead to a successful outcome relies on an actor's perception of the overall goal as congruent with its own. As Stone (1975) argues, the way to achieve such an outcome is to design agreements that ensure co-dependency between the collaborating parties. That way, one party's behaviour directly affects the next. The Cahora Bassa case proves this hypothesis – where the interests of the key actors were aligned, credible commitment was achieved. Where reverse was the case, there was a breakdown in cooperation often leading to defection by one party and subsequently, the negotiation table.

4.9.1 Interest

There were three key types of interests worth noting that needed protection in the Cahora Bassa case, namely economic but more importantly political, and strategic interests (First, 1974). The key interests notable for this case study are those of the apartheid government in South Africa, the Portuguese colonial government and subsequently, the Mozambican government. South Africa and Portugal had an alignment in interests regarding the construction and operation of the Cahora Bassa dam. South Africa at that time was an inward-looking state, self-dependent and self-sufficient. It was torn between opening up to regional cooperation and securing more territories by flexing its financial and military capability muscles, particularly in neighbouring Portuguese territories. But with regards to the dam, the motivation for South Africa was to have

access to *reliable* energy that did not add to the environmental burden associated with coal-fired power stations. Coal-fired power stations need large quantities of water to adequately function – a scarce resource in South Africa (The World Bank, 2009). It had an interest in cheap electricity from the Cahora Bassa. Portugal, on the other hand, was more interested in consolidating its stay in its colonies, especially Mozambique. Thus, the Cahora Bassa dam was promoted as a development project aimed at improving the livelihood of the people, particularly the settler minority. But the project also represented regime security for the Portuguese. They hoped that the dam would cut off routes on the nationalist movements on the Zambezi, thus minimising their ability to recoup and strategise (Isaacman 2001).

Furthermore, the dam was a strategy to tie South Africa's security concerns into those of the Portuguese. As the struggle for liberation gained momentum in Southern Africa and intensified, the South Africans were concerned about a spillover effect. It was in their self-interest to cooperate with the Portuguese in terms of protecting their shared borders to prevent the ease of movement and recuperation by the liberation fighters. As the revolution intensified and coordination between the ANC and FRELIMO nationalist movements increased particularly due to the ease of movement along the Zambezi, it was in the interest of the respective colonial regimes to cooperate and consolidate the security of their regimes. To this effect, the Portuguese and South African government agreed to the exchange of intelligence about people considered to be security risks to their respective regimes (Correia & Verhoef, 2009, p. 59).

Both governments had a shared interest in maintaining autonomy over their respective colonies despite divergence on the means to the end. The collective goal according to Isaacman (2001) was to maintain a white settler colony in the Southern Africa region. To achieve this goal, the strategy at least by Portugal, was to exploit natural resources for *developmental* purposes while locking South Africa into its what can be termed 'a protection plan' by meeting one of its needs – cheap electricity. At the same time, Portugal was wary of ascribing too much responsibility to South Africa concerning the development of the project. From the narrative provided in the first part of this chapter, it can be argued that although Portugal was keen on using South Africa's funds, expertise, and purchasing power for the construction and operation of the dam, it wanted autonomy over the Cahora Bassa dam project. Portugal wanted to remain the primary owner of the project without having to dispute or seek concession from South Africa in terms

of decision-making (Middlemas, 1975). Thus, an alignment in their interests was complementary to the overall goal, at least till 1974.

The years 1974 to 1975 saw the introduction of a new actor to the playing field. Although FRELIMO had been in existence since 1962, this study considers the liberation movement a new actor. The reason for this is that before 1974, FRELIMO was a movement whose mandate was to topple the colonial regime to bring about the independence of Mozambique. The main strategy was the guerrilla attacks. But following the official recognition of Mozambique's self-determination and sovereignty, FRELIMO became an official government meaning requiring a change in strategy. It was the first time FRELIMO as a government would relate with apartheid South Africa and the Portuguese colonial administration on such equal footing that is, government-to-government. However, this turn of events threatened the interests of both the apartheid government and the Portuguese administration. The colonial administrations had two major options at this point. They could either accept the newly independent government and negotiate on the Cahora Bassa dam, or attempt to destabilise the government to re-install the Portuguese colonial administration. South Africa at that time was trying to build a positive international image, one that ironically suggests the unity of the regime with its constituencies, particularly the black majority. This is evident in South Africa's refusal to intervene in Mozambique despite requests by Portuguese settlers to do so (First, 1974).

Despite the 1974 agreement, the Portuguese still had an interest in Mozambique owing to the Cahora Bassa dam project. Back in the mother country, Portugal, a bloodless coup had resulted in the fall of the Caetano regime with the new government promising to grant independence (Funada-Clasen, 2012). Thus, the new government in Mozambique was made up of officials of the new Portuguese government and FRELIMO representatives. This was economically and strategically motivated. Economically, with the Cahora Bassa dam nearing completion, the Portuguese did not want to forfeit the project at a time when it was about to yield returns. Money from the sale of electricity was needed to offset the cost of construction which Portugal had invested. Strategically, one can argue that the Portuguese knew that it had no financial or military capacity to pursue further resistance with nationalist movements. Thus, it became strategically rational for the PCG to grant independence but remain active stakeholders in the running of the country at least in just enough time to tie up loose ends. That is, the colonial

administrator as a rational actor used the period between 1974 till June 1975 when Mozambique was officially granted independence, to re-strategise and lock the new government into a co-dependence pact. The creation of the HCB and the signing of a tripartite electricity agreement between all three actors provide the basis for this claim.

The HCB would symbolise a mechanism to re-define the interest of the FRELIMO-led government concerning energy security issues. This was a tactic to prevent any credible commitment problems from emerging at a future time, at least till the Portuguese recovered the cost of production from electricity sale. The Portuguese mostly owned the HCB with only 18 per cent of shares sold to the new government of Mozambique. The Portuguese wanted the Mozambican government to pay for the cost of dam construction (Isaacman & Isaacman, 2013). Thus, it was necessary to ensure that the FRELIMO-led government's interest in the Cahora Bassa dam was compatible with those of the Portuguese and the apartheid government. The fact that the Mozambicans needed to repay the Portuguese for the dam was a credible commitment tactic. This would ensure self-enforced compliance to the terms of electricity supply by the new government. To an extent, this would also enable the continued presence and involvement of the colonial administration in Mozambique. These assessments so far reinforce the argument in the literature that alignment in the interests of collaborating actors is pivotal for successful cooperation outcomes.

However, the interest of the independent government in Mozambique and those of South Africa and the colonial administration were in discordance. The new government in 1977 reconsidered the terms of the 1969 supply contract between Mozambique and South Africa. The FRELIMO-led government was dissatisfied with the terms of the agreement made between its former colonial administration and South Africa which saw a bulk of the electricity produced exported to South Africa. The government thought it necessary to use the resources to cater to domestic needs thereby launching projects to this effect. This alternative course of action constituted the pursuit of self-interest with guile (Williamson 1990).

Also, the successful installation of FRELIMO as the new government threatened the security of the apartheid regime in South Africa. Prominent figures like Samora Machel, a pioneer of FRELIMO disseminated discourse against white domination (in Mozambique, South Africa

and Rhodesia); this ideology formed part of the principles of the movement (Isaacman & Isaacman, 2013). Having successfully overthrown the Portuguese colonial administration in Mozambique, the apartheid government was concerned that a similar occurrence could take place in its territory. The success would serve as motivation to budding movements like the African National Congress (ANC) to fight relentlessly to attain a similar result. Although these courses of events threatened South Africa's security and energy interest, the independent government had an interest in reneging on its commitment.

For one, there was in-fighting within FRELIMO on governance strategies (Funada-Clasen, 2012).[9] Disagreements on hierarchy and governance models led to the creation of factions within FRELIMO. Thus, it can be argued that to win back its constituents, it was only rational for the new government to renege for the following reasons. First, it was an indication to the citizenry – especially the African population of Mozambique – that the incumbent government was intentional in prioritising their development needs as opposed to the colonial administration. Second, it was also a means to flex the *sovereignty muscle* in the country and sub-region albeit its economic activities were at a record low. This would prove to the PCG that the new government can make independent decisions deemed to foster economic and human development inclusively. It would also prove to colonial administration in neighbouring countries that a new regime was in place hence, colonial ties and cooperative arrangements would need to be revised to suit the interest of the new government. It was furthermore an indication to (neighbouring) countries still under colonial occupation that independence was possible if they consistently and violently resisted colonial rule. Third, launching projects that would use Mozambique's resources for its development – an in-ward looking strategy – was like the apartheid government's development model. The temptation to renege was owing to the government's *strategic interest* as opposed to uncertainty or political risk.

Reneging on the agreement created free-riding problems where the independent government sought to benefit from a project it attempted to sabotage but did not quite invest in. The free-rider problem occurs when an individual or group benefit from an initiative without expending effort or contributing financially. Although it can be argued that some of the investment funds

[9] For more on the narrative on FRELIMO's inside squabble, see Funada-Classen, Sayaka (2012), The Origins of War in Mozambique: A History of Unity and Division, Ochanomizu Shobo Co. Ltd, Tokyo: Japan.

came from the sale of Mozambique's natural resources, and therefore the indigenes are within their right to lay claim to the project. In this case, it meant that South Africa received less firm power than initially agreed upon. This hurt the South African economy in two ways – it reduced how much electricity they would receive and secondly, Eskom made a loss in terms of electricity trade. In terms of the output, Eskom buys the bulk of the electricity and sells a percentage back to Mozambique's electric utility – EDM. By reducing how much electricity Eskom received, it was unable to resell to EDM to earn rent. This indicates the extent to which South Africa's interest was threatened by the unilateral decision made by the FRELIMO government. This analysis shows that where the interest of collaborating partners is mal-aligned, credible commitment becomes undermined.

In response, South Africa supported the anti-FRELIMO movement impersonated by the MNR/RENAMO. The main idea behind creating RENAMO was to thwart any development effort the FRELIMO government made excluding sabotaging the dam and its transmission lines. But as the insurgent group became radicalized, it targeted transmission lines and pylons incapacitating the movement of electricity to South Africa by more than 50 per cent. Following the continued vandalisation of dam-related property by RENAMO after the Nkomati Accord was signed in 1984 forced South Africa to rethink its position on the new Mozambican government. The analyses above echo the arguments in credible commitment literature. When collaborating parties buy into the overall goal of a cooperative initiative, credible commitment becomes self-motivated and enforced. Where opportunistic behaviour undermines collective action, a breakdown in cooperation is highly likely. Furthermore, although all parties favoured the continued operation of the Cahora Bassa dam, they varied on the means to the end.

4.9.2 Iteration

The principle of iteration suggests that actors within long term investment cooperation interact repeatedly to establish credible commitment. Considering that the projects take a long time to materialise, investors and host governments alike can become wary or be diverted by any dire crisis. Nonetheless, when actors interact repeatedly, they can mirror the action of the other actor in the previous round – this is beneficial for monitoring compliance and incentivising commitment. The logic here is that strategically self-interested actors can benefit from mutually beneficial cooperation in a repeated interaction setting.

The principle of iteration also known as a repeated game involves multiple rounds of interaction between two or more actors. This differs from a once-off game. In a once-off game, actors only interact in one round of play. Repeated games are better suited for large dam investment cooperation because projects span a lengthy period and uncertainty is a constant. Actors need to repeatedly interact to monitor compliance, incentivise commitment or punish defection all of which require continuous adjustment in strategic behaviour and preferences. In this type of interaction, the dominant strategy for any actor is a credible reputation. Buskens (1998) defines reputation as a non-contractual mechanism for governing the interactions between two or more actors. In a repeated interaction, credible reputation becomes the dominant strategy for all participants, especially the host government. Thus, when actors can prioritise the collective goal over opportunism, they build a credible reputation among their peers which may have an impact beyond the confines of said collaboration.

In this case study South Africa, the Portuguese colonial government and subsequently, Mozambique had repeated interactions. Given the geopolitical tensions characterised by threats of expansion between South Africa and Portugal in the scramble for colonies in Southern Africa, it became important to Portugal to build a credible reputation. This preference is evident at different stages of its interaction with South Africa. The establishment of economic links with South Africa was a credible reputation strategy. Established in 1909, the Mozambique Convention was the basis of economic inter-dependence and relations with South Africa. The Convention was revised twice in 1928 and 1930. Mozambique was a major source of mineworkers following the discovery of gold in the Witwatersrand (Marks, 1999). The use of migrant labour and movement of the workforce between the two colonies laid the foundation for other development partnerships. For example, railway and road networks were planned between the two countries to ease the movements of goods and services (Marks, 1999).

The Cahora Bassa dam was another strategy to build a credible reputation. The project would not only symbolise Portugal's commitment to a white Southern Africa but form the basis for an even deeper relationship with South Africa. The focus of the relations would be on fighting a common enemy – nationalist movements (Azevdo, 1980). As documented in the narrative, Portugal pursued dam development despite the odds indicating otherwise. Given that dam was

export-oriented, that is, built mainly for export to South Africa, building a credible reputation was pivotal. For example, the dam project would be a 'waste' if there was no off-taker with a huge electricity market to buy the output. The domestic consumption in Mozambique at that time was relatively low with electrification concentrated in urban areas (O'Keefe & Munslow, 1984). Portugal needed to keep South Africa interested in the project and a credible reputation became the strategic means to the end.

Similarly, following the independence of Mozambique and the radicalisation of RENAMO, credible reputation became the dominant strategy for South Africa. After signing the Nkomati Accord, South Africa had to follow through on its commitment towards peace and security with Mozambique, and in the Southern Africa region. This meant that it had to denounce its relationship with RENAMO and change alliances. This was pivotal to signalling a credible reputation to the Mozambican government. The incentive to follow through on this commitment was motivated by RENAMO's refusal to comply with the terms of the cease-fire agreement. It carried on with the destruction of pylons particularly those transmitting electricity to South Africa thus, undermining South Africa's interest. It became somewhat easier for South Africa to re-strategise and change allegiance given RENAMO's rebellion.

The importance of signalling a credible commitment to any long-term cooperation cannot be overstated. It is a strong credible commitment signal which serves as a persuasive communication to other parties involved in the cooperative arrangement. The above analysis shows that when actors prioritise their reputation, credible commitment becomes self-enforced. But in cases when actors choose to act opportunistically with no regard for consequences on their reputation, it is important to have institutional frameworks or a supranational authority to act as a credible enforcer.

4.9.3 The role of institutions

Finally, institutions are the rules of the game (North 1993). They encompass regulations that guide the interaction between actors. In 1969, both governments signed a PPA or supply contract – it was useful in preventing credibility issues at that time as well as problems that would emerge at a later stage. The contract stipulated terms and conditions associated with financing the project, the supply of electricity to Eskom, and the pricing of the output – factors

that could cause credible commitment problems but at that time and in future. To resolve the challenge of uncertainty and financing of the project, the contract stipulates that each party shall:

> [A]ssume responsibility within his own territory for any decision regarding equipment in his territory and for payments or making arrangements for payments to be made in terms of the contract with the Consortium, and shall assume responsibility for taking over and for operation and maintenance of the assets and equipment in his territory after the Project has been brought into commercial operation… (Ministério do Ultramar 1969, 11).

With each actor taking financial responsibility for the equipment required for energy supply in their respective territories, it prevented any challenges to the cooperative arrangement that would have emerged in that instance. South Africa was responsible for funding the Apollo station and the transmission lines from their territory to the Mozambican border. According to the Department of Foreign Affairs (1984), this cost about R47 million. South Africa had also provided loans to Portugal to fund dam construction and was instrumental in providing resources and manpower to fend off the liberation movement (Department of Foreign Affairs, 1984).

On the supply of electricity to Eskom, the contract also stipulated the corresponding terms and conditions. For instance, it states that the Supply Authority [the Portuguese colonial government and by extension, the government of the Republic of Portugal] will deliver electricity to the Apollo sub-station in South Africa through the HVDC transmission lines. It also outlines how much electricity would be reserved for the territory of Mozambique either for use or sale. The maximum demand was 55 megawatts in 1975 and 100 megawatts by 1980. Besides, the contractual maximum demand for the Apollo sub-station in South Africa was 625 megawatts in 1975 but increased drastically to 1370 megawatts by 1980 (Ministério Do Ultramar, 1969). Within this contract, both Eskom and the Supply Authority have certain rights and constraints – each working to foster a credible commitment to the cooperative arrangement. For instance, Eskom is given the right to "decline a revision which would have the effect of

increasing the contractual maximum demands[10] within the first five years of operation; if the period of notice of the reduction in contractual maximum demand is less than five years" and if it considers any revision of the contract to be prejudicial (Ministério Do Ultramar, 1969, pp. 18-20)

The provision of these clauses in the contract indicates that both governments were aware of potential temptation to renege in future. Foreshadowing attempts at decolonization in the region, it was in Eskom's interest to ensure that irrespective of whether the Portuguese colonial government remains in power or not, its access to the electricity from the dam is secure. By reserving the right to reject any proposal to increase Mozambique's reserve capacity and needing to be consulted before any changes to the agreement in terms of supply are made allowed Eskom to ensure that the contractual maximum demand owing to them were met without defecting.

In terms of pricing, the contract specifies that Eskom is obligated to pay for the power it receives from Cahora Bassa at the Apollo power station every month. It stipulates the conditions for an increase or decrease in energy tariffs payable by Eskom. It states that the price can be reduced to 0.2 cents if the quantity of supply to Eskom increases to yield them an annual saving of R12.5 million. To keep the bulk purchaser from reneging on the power purchase agreement, it was important for Portugal to set the price of electricity output below market price – a strategy to *tie* the latter to commit to the project. The price was set at 0.3 cents per kilowatt (Ministério Do Ultramar, 1969, p. 34). The challenge this strategy poses is that in future (or upon completion of the project), the Portuguese colonial government could negotiate for a higher electricity tariff. South Africa could potentially use its position as the bulk off-taker to negotiate for a cheaper price of electricity or prevent potential buyers from accessing the output in future – creating a credible commitment challenge. Overall, the power purchase agreement signed between Eskom and the Portuguese government served as a credible commitment mechanism in preventing and, in the event, it occurred at a later stage, managing issues around reneging.

[10] Contractual maximum demand is the amount of firm power, which can be delivered at Apollo as set out in the contract. It indicates less the amounts of power reserved to the Supply Authority.

Also, in June 1988, a trilateral meeting between delegations from Portugal, the Republic of South Africa and the People's Republic of Mozambique was held in Lisbon to discuss the Cahora Bassa project. Each delegation acknowledged the importance of repairing the dilapidated transmission lines and the need for the dam to be fully operational (the supply side more importantly); particularly the associated economic and socio-economic benefits. After much deliberation, the delegations agreed to recommend to their respective governments that the following agreement is confirmed:

> "A contract for the reconstruction and rehabilitation of the HVDC transmission lines should be placed with a consortium consisting of SAE, an Italian transmission line contractor and power lines, a South African transmission line contractor; the work on this contract should start as soon as possible; a protection force should be constituted by Mozambique with non-lethal logistic support from South Africa dedicated to protecting the repair and rehabilitation works and personnel; the structure of the tariff agreed in 1984 should be maintained but the level of the tariff should be increased to take into account exchange rate variations, the viability of the project and the present generating capacity in South Africa; a distribution entity appointed by the three parties for the purpose of ensuring the efficient delivery of power and the security of the HVDC transmission lines would be in place once the power supply to South Africa is resumed, the costs for this entity should be shared equally between the parties." (Begg, Southern Africa Record, 1988, pp. 25-26)

According to this agreement, 1,400km of power lines of which 900 km traversed areas controlled by RENAMO forces were to undergo rehabilitation and an armed force was to be established to protect the lines after completion (Cravinho, 2004, p. 751). Still, in 1988, an agreement was signed between Eskom and HCB; it would see the former get a minimum of 1450MW generated from the Cahora Bassa's single power station (Isaacman & Sneddon, 2000). The above-stated agreement was useful to some extent, in preventing credibility challenges that would have emerged regarding the repairs and rehabilitation of the transmission lines. With responsibility evenly distributed among the actors, each had vested interest in the completion of the rehabilitation of the power lines, and the responsibility to *police* the adherence of the other actors.

Also, the Lusaka peace accord was a credible commitment mechanism. Under the accord, the Portuguese colonial administration would receive 82 per cent of shares in the Cahora Bass, through the HCB in exchange for assuming debt in the development of the Cahora Bassa project. Only 18 per cent would be delegated to the Mozambican government. Following the independence of the Mozambican state, the Constitution of the Cahora Bassa was signed between the PCG (whose interest became unified with the mother country Portugal) and the FRELIMO-led government on June 1975. It granted the HCB the right to manage the dam until Mozambique repaid the construction cost (Isaacman and Isaacman 2013, 5).

Institutions particularly contracts were useful in addressing credibility problems in the Cahora Bassa case study. The clauses incorporated into contracts serve to limit or constrain opportunistic behaviour thereby forcing actors to follow a course of action or inaction. In this case study, contracts often forced actors to re-strategise and re-align their interests to the collective goal. One example of this the Nkomati Accord where South Africa was tied into pursuing cooperation with a former enemy, Mozambique. It is also important to note that the Cahora Bassa case offers a unique dynamic to the study of large dam investment cooperation. Drawing from the above analysis, most of the credibility problems in this case study were prevented rather than resolved owing to the role of institutions.

4.10 Conclusion

This chapter examined the challenges of credible commitment in the Cahora Bassa case study. It began by discussing the geopolitical dynamics of Southern Africa at that time to provide context on the problems that later emerged. This discussion was categorised into three eras in no chronological order: mid-1950s to 1969, 1970 to 1990, and 1990s to the 2000s. These time frames encompass the first step (among many previous attempts) towards the construction and operation of the dam until the post-operation phase characterised by electricity pricing problems. Then, it identified South Africa, Portugal and Mozambique as major players in the financing and development of the Cahora Bassa dam. It provided a breakdown of the project financing between the actors as documented by the Department of Foreign Affairs, South Africa. Following this, a discussion of each actor/financier was provided. This provided an insight into the vested interest each actor had in the dam considering that the credibility of their commitment was comparable to their respective interest.

The chapter showed that credible commitment problems pervaded the Cahora Bassa dam case study. However, the will and commitment embodied in the interests of the respective actors were fundamental in overcoming credibility problems. Across the three epochs discussed above, it was found that credibility problem in this case study was characterised by time-inconsistency and later in the 2000s, lack of supranational authority problems. These problems emerged largely owing to uncertainty about the fate of the Portuguese in the colony of Mozambique, uncertainty about the prospects of project implementation to the benefit of the South Africans, uncertainty about the allegiance of the newly independent government vis-à-vis South Africa's energy interests. These uncertainties coupled with the lack of a supranational authority to monitor compliance created an enabling ground for credible commitment problems to thrive.

However, the analyses also showed that the will and commitment of the Portuguese government were instrumental in preventing any potential breakdown in the signalling of credible commitment. In terms of how to establish credible commitment, the analysis showed that alignment in the interest of the actors featured prominently as an explanatory variable. Where the interests of the key actors were aligned albeit divergent, credible commitment was achieved. This was evident across the case study: negotiations for the construction of the dam and uniting against the common enemy (nationalist movements) among others.

The next chapter discusses the Inga case study. Similar to this chapter, it discusses the historical narrative of the dam project, the key financiers of the project vis-à-vis their vested interest, the credible commitment challenges characterising the project, and the mechanisms employed to address them.

CHAPTER FIVE: THE GRAND INGA DAM

The Grand Inga dam, of which the first phase is Inga III, remains a grand illusion despite its potential to increase the share of renewable energy in Africa's production mix. For decades, successive governments of the Democratic Republic of Congo (DRC) and investors have been involved in negotiations regarding the financing of the Grand Inga project. In 2014, the World Bank together with the African Development Bank committed to funding the technical assistance phase of the project while South Africa pledged to buy 2500 MW of the project's output. But by 2016, the World Bank withdrew its commitment stating that the government of the DRC had taken the project on a different course from the initial agreement. This statement is indicative and characteristic of a credible commitment problem – the host government's inability to follow through on a promise. As a result, project implementation suffered setbacks and the project remains a dream.

Understanding the challenges that emerged between the investors and the government of the DRC is crucial to explaining the failed outcome of the project. By assessing the case study from the perspective of the credible commitment (problem), it looks beyond the mainstream cost-benefit approach to studying investor-(host) government cooperation dynamics. Instead, it assesses factors that influence an actor's decision to persist or default in commitment. To reiterate, commitment encompasses an actor's willingness to follow through on a course of action or inaction. Problems emerge, in the case of the Inga, when an actor persuades an investor of compliance but in future chooses an alternative course of action. This is the issue-area this chapter is concerned with as it pertains to the Grand Inga project.

The chapter aims to examine the challenges of securing investments for large dam development. To this effect, it assesses the credible commitment problems that emerged in the Grand Inga case study. Considering that as an analytical framework, credible commitment enables an understanding of cooperation outcomes through an assessment of individual strategic choices. Thus, in this chapter, I attempt to account for the failure of the project by examining the strategic behaviour of the host government in investment cooperation with the World Bank and other actors. To achieve this, the chapter is structured as follows. It begins by contextualising the dam narrative in the political and development history of the DRC. The

narrative acknowledges efforts that were made in the colonial era to exploit the water-for-energy resource of the Inga Fall up until the time of former President Joseph Kabila. Following this, a discussion on the political economy of the project is provided. To provide context, a description and financial breakdown of the technical assistance phase is documented. This is followed by a discussion of the key actors/stakeholders on the project with an emphasis on their characters and vested interests. This is important in establishing the foundation upon which an assessment of the credible commitment problems in the case study can take place.

5.1 Dam narrative and political history of the DRC

The political and development history of the DRCongo is characterized by the scramble for natural resources, power struggle, and conflict. The country's internal political environment was and continues to be dictated by the interplay of power between foreign powers and local elites (Congressional Research Service, 2019). The Congo River is one of the many natural resources the country possesses. It has the potential to contribute to renewable energy production, water security and improving agricultural production. Plans to harness the River's potential date back to the nineteenth century, although the twentieth century, the 1914-8 war put the envisaged plan for the Congo River on hold (Campus, 1958, pp. 10-11). It is documented that the colonial regime in the DRC had ordered the forced removal of six clans in anticipation of the corporate implementation of a hydropower scheme (Campus, 1958).

Preparations to exploit the Inga Fall led to the establishment of a consortium – an indication of the relentless efforts by Europeans to harness the River for hydroelectricity purposes. Following Colonel Van Deuren's proposal to harness the hydroelectricity potential of the Inga Falls in 1928, a consortium called Syneba was set up in 1929 (Bertieaux, 1956). It was the first Inga related consortium with a mandate to study the feasibility of a development project particularly a hydropower dam. The consortium comprised of Belgian companies and the colony of Belgian Congo. The report of the study informed the proposal for the partial development of the site for hydroelectricity. Alongside the dam, he proposed the development of key industries in electrometallurgy and electrochemistry to absorb the electricity that would be generated (Van Deuren, 1928) (Jacquemot, 2017). Other organisations similarly interested in the Grand Inga project were Sydelco in 1946, SydelInga in 1952 and the Inga Institute in 1956. In 1960 following independence, the institute was responsible for the recommendation

that development of Inga dams should be largely a government project (Le Courier d'Afrique, 1969)

But as World War II began, Belgium abandoned plans to harness the Congo River's resources. Adolf Hitler's fetish of having Europe under his control saw the invasion of Poland, with the help of Russia, which later spread to other parts of Europe. Belgium was no exception. As a result of the war, Belgian Congo was unable to persuade investors to invest in the development of a dam project on the Inga Falls (Gottschalk, 2016, p. 281). At this time, preliminary studies on the potentiality of the site had been studied and recommendations alluded to the benefits of developing the resources. Located at the Inga Falls, the Congo River represented, at least to the colonial regime, the possibility of producing cheap surplus electricity. The technology to export the excess electricity to alleviate the post-war energy deficit in Europe was limited hence, they resolved to build factories and refineries in the Congo to process raw materials and export them as finished goods (Showers, 2009, p. 35). As Bertieaux (1956) notes, technical and economic concerns emerged regarding the development of a hydroelectric dam project. On the technical side, Belgian Congo contemplated the design and size of the project. Would it be technically feasible to build a dam large enough to harness *all* the capacity of the Inga fall or should the dam be built in stages? Considering that irrespective of what option was decided on, the supply of electricity from the dam would exceed local demand. This emphasised the need for an off-taker – state or sector – to buy surplus electricity to prevent waste and economic loss.

In terms of economic issues, the colonial administration was concerned about the pricing of the resource once the dam was completed. Usually, electricity tariffs encompass the cost of production and losses. The other economic issue pertained to the consumption of electricity output. Considering that the potential electricity generated would exceed the domestic demand, there was a need to either identify an off-taker willing to buy the resource or develop industries that would consume the surplus electricity. Industries considered were large electrochemical and electro-metallurgical industries (Bertieaux, 1956). The development of industries in Belgian Congo was favoured over an off-taker state. This would boost the Congo economy to the benefit of the colonizers who assumed that the DRC would be a settler colony and to the detriments of the locals, whose cheap labour would be used to manage the thriving industrialization.

After the end of World War II in 1945, Belgium revived the proposal to build the Inga dam. By 1952, after Belgium recovered from World War II, proposals for an Inga Dam were revived. Several smelters and companies expressed interest in the project with some corporations offering to sponsor a research consortium to further study the project's potential. The study group, *Syndicat pour le Développement de l'électrification du Bas-Congo* (Sydelco) and mandated it to study the feasibility of hydropower stations on the Inga site and search for potential corporate clients (Maupin, 2015; Gottschalk 2016). The colonial government had no interest in electrifying rural communities where it confined its African subjects; its electrification proposals focused on the Leopoldville-Matadi railway and the Congo's harbours. The government sought to lobby foreign governments and corporations to set up uranium enrichment plants and build aluminium and other smelters in Leopoldville, to no avail (Showers, 2009, pp. 35-39). The onset of the struggle for independence played a crucial role in dissuading potential foreign investors for the Inga project.

By 1956, resistance against colonial rule had swept through the Congo. The Congolese people like their African counterparts, wanted the autonomy to govern its land and all in it (including its resources). They would be able to adjudicate over their internal affairs and develop projects that would benefit indigenes of the country (Nzongola-Ntalaja, 2002). Unfortunately, the presumption was cut short by the Congo Crisis. It began in the aftermath of independence in 1960 and lasted for four years (until 1965). The crisis saw a violent transition of power where Patrice Lumumba the first elected Prime Minister was assassinated. This resulted in the installation of Mobutu Sese Seko as the political head – he seized power through a military coup in 1965. Nzongola-Ntalaja (2002) terms the Congo crisis as a 'crisis of decolonization' where he claims Belgium failed to hand over power in an orderly fashion to prevent a radical nationalist such as Lumumba from becoming prime minister and handing over instead, to a well-groomed moderate leadership group that could be expected to advance Western interests in Central and Southern Africa (Nzongola-Ntalaja, 2002).

Oppression, repression and fear characterized Mobutu's dictatorial reign. Mobutu was as interested in electric power as he was in political authority. Bayart (2009) supposes that Mobutu's interest in electric power was to "control the switch providing electricity to

Katanga," to dissuade any further attempts at secession. Inga I and II were commissioned in 1972 and 1982 respectively (Bayart, 2009). As his Western allies sought to create more industries in the DRC, Mobutu through the support of the United States, funded the construction and operation of Inga I and II in 1972 and 1982 respectively. The dams were envisioned to produce 351MW and 1424 MW however they only functioned at 20% of their full capacity (Aimé, 2015). As with any infrastructure, the key to longevity and continued efficiency is maintenance. Inga I and II were poorly maintained as Mobutu focused on ensuring his stay in political power and draining the DRC's economy, to his detriment later on. The output from the dam was used to power mines and industrial hubs around Katanga as well as the Presidential residence (Bayart, 2009, p. 245). The people of Congo barely benefited from the so-called development project. Not many saw Mobutu's development project as beneficial. It is documented that from 1968 to 1974, the economic conditions in the DRC were good owing to the restoration of order and high copper price on the international markets. However, by the beginning of 1974 the 'Zairianization' of the economy (largely describes Mobutu's nationalization of key sectors of the economy) had economic consequences on the then Zaire. His regime's poorly conceived industrialization projects such as the Inga Dam projects plunged the country into debt (Turner, 2007, p. 35).

South Africa would quickly replace its colonial European counterparts in the search for energy security in the region. In 1976, Henry Olivier, a South African Civil Engineer who aided in the construction of dams in several British Commonwealth countries proposed that "a pan-African power transmission grid … will make it possible to send Inga power to any part of Southern Africa", including north of Uganda (Olivier, 1976, pp. 26, 60). This marked the beginning of a transition from the apartheid government's self-sufficiency policy to exploring the potential for cooperation with neighbouring countries. Olivier advocated for the development of Inga dams to the benefit of South Africa. In his argument, he emphasised that the importation of hydropower from the DRC would save South Africa the cost of developing new alternatives and close to 500 billion litres of cooling water used in coal-fired power stations per year (Olivier, 1976, p. 41). Electricity transmission from Inga II, through the Southern African Power Pool began in late 1995, a year after the collapse of the apartheid government in South Africa, allowing for a democratic rule and economically open policy. As electricity cooperation emboldened in the region talks around the first phase of the Grand Inga began. The dam was proposed to generate 4800 MW of electricity (Gottschalk, 2016). By 2003, efforts

were made to establish a consortium to study and build the Grand Inga however, the lack of credible commitment would undermine such efforts resulting in a breakdown in cooperation.

On the political end, there had been two transitions of power: from Mobutu to Laurent Kabila and his son, Joseph Desire Kabila (Congressional Research Service, 2019). The political climate at that time was characterised by high levels of conflict and instability. Despite the political instability in the DRC, strides towards building the Grand Inga were in motion. South Africa through its electric utility Eskom has been illustrious in promoting the project. For one, successfully constructing and operating the project will guarantee South Africa 2500 MW of the electricity output (Maupin, 2015, p. 62). It was therefore in its interest to push for project implementation and completion. The Grand Inga project was initially intended to be a collective effort at the regional level. That is, through regional cooperation, the project would be implemented; this resulted in the establishment of the Western Corridor Power Company, Westcor, under the auspice of the Southern African Power Pool (SAPP) (Naidoo, Mbuere, Keletsitse, Ventura, & Musanda, 2001).

Westcor comprised of electric utilities from South Africa, Angola, Namibia, Botswana, and the DRC. They had the financial backing of the African Development Bank (AfDB) for project implementation (Maupin, 2015). An Inter-governmental Memorandum of Understanding (MoU) was signed in 2004 and pre-feasibility studies completed in 2005. The project under Westcor failed to materialize owing to Eskom and the South African government's failure to follow through on their financial commitments. As a result, the DRC government became uncertain about South Africa's commitment to the project and sought alternative partners and funding sources for the Grand Inga project (Gottschalk, 2016). By 2010, the DRC pulled out on Westcor to welcome BHP Billiton as a replacement partner. BHP Billiton signed an agreement with the DRC government to develop an aluminium smelter in Bas-Congo Province based on the promise of receiving about 1600 MW of electricity from Grand Inga (Maupin, 2015).

The DRC government, as a rational actor, favoured its cooperation with BHP Billiton over the Westcor. It was able to make major decisions regarding the pace of the project and its beneficiaries without having to be locked into sharing the dam's output with countries in the

region. This is because under Westcor, through SAPP, the member-states would have shared the cost of project development, and thus some benefits needed to be accorded. However, the relationship with BHP Billiton broke down with the company citing issues of volatility in the global aluminium market and the poor investment conditions in the DRC as reasons for its withdrawal (Maupin, 2015).

After regional efforts to develop the Grand Inga failed, the governments of the DRC and South Africa engaged in talks to revive and hopefully implement the project. In November 2011, both Presidents Joseph Kabila and Jacob Zuma signed the first Inga MoU and the Framework Treaty on 7 May 2013. In March 2013, the SA Finance Minister set aside 200 billion ZAR and both presidents signed the full treaty on 29 October 2013 (Governments of the DRC and South Africa, 2013). Eskom contracted to "provide 15% of the equity towards construction; become the anchor customer and buy 2500 MW from Grand Inga; plus between 20% and 30% of generation from further developments (Governments of the DRC and South Africa, 2013). Eskom bilaterally negotiated with Angola, Botswana, Namibia, Zambia and Zimbabwe for right-of-way for the transmission cables. South Africa would take up responsibility for the construction of transmission lines from its grid to the borders of the DRC; SNEL would build the cables from that border to Inga (Fabricius 2013 in Gottschalk 2016, 283). The estimated costs for all Inga schemes are $80 billion, yielding energy at $0.03 per kW. The transmission cables will cost an additional $10 billion (Gottschalk, 2016).

In November 2013, the AfDB Group approved US$68 million in financing the multinational Inga Site Development and Electricity Access Support Project (PASEL). This will help in improving access to electricity especially to rural households that are not catered for by Inga I and II (African Development Bank Group , 2013). In 2014, the World Bank approved $73.1 million grant adding to the $33.4 million approved by the African Development Bank as technical assistance (World Bank, 2016).[11] This would allow for feasibility studies – social and environmental assessments to be carried out to guide the development of the project. The funds will not be used for construction or operational activities. Instead, it would help establish a development authority called *L'Agence pour le Developpement et la Promotion d'Inga*

[11] The importance of technical assistance is to ensure that the project would not pose any danger or challenge after completion. It allows for early detection on any potential threat to the environment, bio-diversity and people.

(ADEPI) or the Agency for the Promotion of the Inga (ADPI) charged with the responsibility of managing and monitoring Inga development as well as the sourcing of private participation and public financing (Fabricius, 2016). The funds will also support the establishment and strengthening of other key institutions of transparency such as the Commission for the Development of the Inga Site (CODESI); it was tasked with managing inter-ministerial coordination. The Inga III Project Management Unit (CGI3) was the technical arm of the Ministry of Energy and Hydraulic Resources (MEHR) mandated with the implementation of the project. And, the Inga Facilitation Committee (CFI) was tasked with overseeing project implementation (Congo Research Group and Resource Matters, 2019). Despite these efforts at institutional development to bolster transparency in the Grand Inga proceedings, the World Bank opted out of the project.

As of 2016, the World Bank Group suspended funding for the US$73.10 million of technical assistance for the Grand Inga project, after only 6% of the fund had been expended. This fund was purposed for complementary studies of the project site, strategic advice to the Government, capacity building through the ADEPI and strengthening key domestic institutions (World Bank, 2016). The World Bank stated that funding for the project was suspended and attributed it to the DRC government taking a 'different strategic direction' to that agreed between the World Bank and the Government in 2014. The statement suggested that the DRC government intended to place ADEPI, the supervising authority, under the auspice of President Joseph Kabila rather than the original plan to function as an independent authority reporting to the Prime Minister (Fabricius, 2016).

PART II: The political economy of the Grand Inga dam

This section scrutinizes the investment cooperation between the government of the DRC and key stakeholders. It examines the political economy of this cooperation using credible commitment (problem) as the analytical framework. To this effect, this section seeks to establish who the key actors are and their respective vested interests in the development of the Inga dam. It examines the compatibility of their respective interests in achieving the collective goal – completing the technical assistance phase of the Inga project and subsequently, the construction and operation of the dam. This assessment further serves as a basis to determine and study the origins of the credibility problems that emerged.

The section begins with a brief description of the Inga project as well as a breakdown of the financial cost and contributors. This indicates the vested interest each actor has in achieving the collective goal. A discussion of the key stakeholders and their character is provided; this establishes the nature of the actor for instance, profit-oriented or development-oriented. An assessment of the narrative of the dam vis-à-vis credibility problems is provided and the form of the problem. The section continues into assessing the mechanisms employed to address these problems and their effectiveness. It concludes with a summary of the key points discussed in this chapter as well as an emphasis on the importance of credible commitment in large dam investment cooperation.

5.2 Project description: The Grand Inga dam

The DRC is home to the proposed Grand Inga dam, which is said to be the world's largest hydropower scheme ahead of China's Three Gorges Dam. The scheme will consist of eleven dams and seven hydropower generation stations. Inga III Basse Chute as the first phase of the project will have the generation capacity of 4800MW (Nguh, 2016). It will be constructed in two phases: 1800MW low head scheme that does not require a dam, and a 3000MW scheme with a dam (Gruver, Lieb, Shen, Wei, & West, 2014). The project will include a water intake on the Congo River, upstream of the water intake for Inga I and II existing power stations; a 12 km long canal (requiring 77 hectares of land) to transport water into the Bundi Valley; a 100-metre high dam in the Bundi Valley; and a hydropower station releasing water into the Congo River downstream of Inga I and II. The Grand Inga will divert part of the Congo River water into the Bundi tributary and a dam across the Bundi valley. Transmission cables will be constructed from the power station to Kinshasa and to the DRC's border via Kolwezi in the Katanga region. The transmission lines will have a total length of 1850 km and associated switchyards and converting stations (United States Agency for International Development (USAID) 2015; World Bank 2014).

Inga I and II are being rehabilitated to meet their installed capacity of a combined 1775 MW – this rehabilitation is facilitated with financial assistance from the World Bank, the European Investment Bank, and the African Development Bank. The rehabilitation will be completed through a partial privatisation plan with MagEnergy and financial support from South Africa's

Industrial Development Corporation (Aimé 2015, 235). Both dams were producing below their installed capacity due to lack of maintenance since their commissioning, due to political and economic instability among other factors. The projected demand for electricity in Kinshasa by 2025 is 2000 MW and the output from the three Inga dams including the proposed Grand Inga project, would meet this demand.

Out of the 4800 MW that would be produced by Inga, 1000 MW will be sold to the national electric parastatal SNEL, which will, in turn, sell to both households and small businesses in the greater parts of Kinshasa. About 1300 MW will be sold to mining companies in the Katanga province. The maintenance of the rehabilitated and proposed infrastructure would depend on funds derived from the sale of electricity. Recovering electricity tariffs has been one of SNEL's major challenges for several reasons including the inability of (low-income) households to pay for the service, illegal connections, and poor institutional and accountability framework in tariff collection. The combined role of credit-worthy customers in paying for the services and SNEL's ability to collect and account for electricity tariffs would necessitate consistency in efficiency and service delivery (World Bank, 2014, p. 9). South Africa's electric utility, Eskom, is also on board to buy 2500 MW of the electricity generated, increasing the bankability of the Grand Inga and creating assurance to private investors in the sunken asset sector.

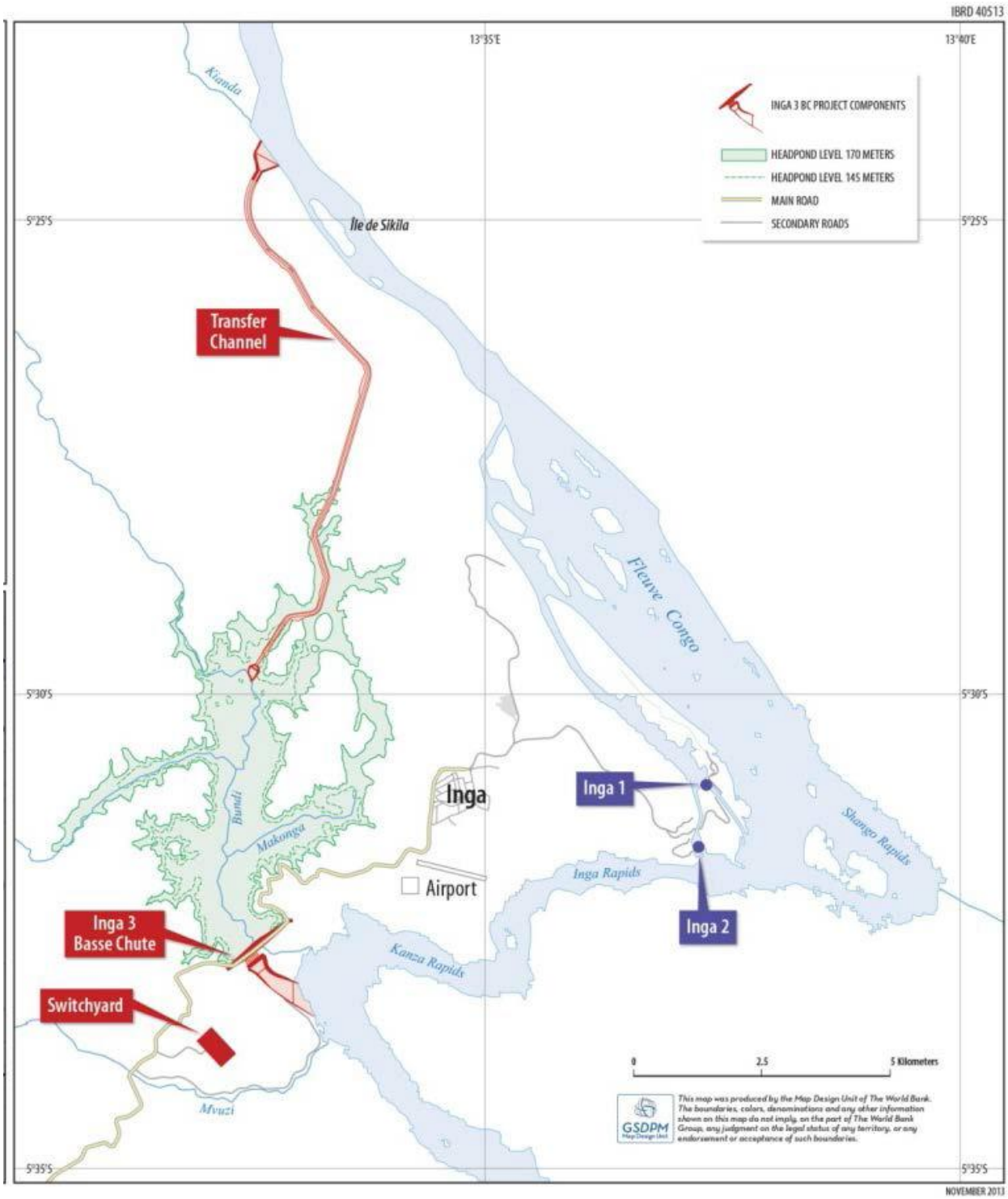

Figure 8: Map of the Inga III Basse-Chute Site

Source: The World Bank (2014)

5.3 Project cost structure and financing mechanism

The total cost of financing the Grand Inga project is estimated at US$14 billion[12] with technical assistance costing an estimated US$106.50 million[13] (World Bank 2014, 10; 12-15). Out of the US$14 billion, private developers will provide US$8.6 billion, the DRC US$3.4 billion and South Africa, US$2 billion (African Union 2018, 2). The estimated investment costs for all phases of Grand Inga are over US$40 billion, and the transmission system needed to distribute its power is said to cost at least another US$40 billion (World Bank, 2014, pp. 10, 12-15; African Union, 2018; USAID 2015, 18). The high costs associated with the Grand Inga development exceed the coffers of the state or the private sector independently.

The World Bank (2014) notes that public financing reduces the project's cost but it is limited owing to the DRC being heavily indebted with limited opportunities for concessional loans. Private investments face huge financial and country risks constraints, dissuading them to invest solely without some level of assurance. The benefits of both types of financing can complement each other through a Public-Private Partnership (PPP) – this would see the private sector contribute the necessary technical, technological and managerial skills required to build the dam while the public sector would offer the institutional framework and capacity for project implementation (The World Bank 2014, 10). Technical assistance includes the provision of strategic advice and expertise to the Government of the DRC, complementary studies, capacity building, and strengthening key institutions like SNEL and the Ministry of Energy to function transparently and efficiently. These activities are said to create an enabling environment to attract private investments, select private developers, mobilize public funding and negotiate power purchase agreements (World Bank, 2014, p. 12).

Technical assistance to the Government of the DRC was co-financed by the International Development Agency (IDA)[14] and the African Development Bank (AfDB). The technical assistance project consists of two components namely: the Inga III BC development support

[12] This is an estimated cost – it varies depending on year of estimate and inclusion of various cost components.
[13] The technical assistance project is made up of two components: the Grand Inga-BC development support estimated to cost US$80.6 million, and the mid-size hydropower development support which will cost an approximate US$25.6 million. Together, these figures add up to US$106.2 million.
[14] The IDA is part of the World Bank and complements the Bank's original lending arm, which is the International Bank for Reconstruction and Development.

and the Mid-size hydropower development support. The Inga development support comprises of studies, transaction advice, procurement support, building institutional support, and sector strengthening. This component is estimated to cost US$80.6 million. The mid-size hydropower development support consists of establishing and/or strengthening the institutional, regulatory and legal framework needed to develop the hydro project, and carbon finance market development all estimated at US$25.6 million (World Bank, 2014, pp. 12-15).

The total amount of technical assistance needed for Inga III-BC project is US$106.5 million and excludes financing by a private developer for studies, engineering, sub-contracting, due diligence and financing mobilization for the privately financed part of the project development. The IDA will provide US$73.1 million and the AfDB, US$33.4 million. In addition to this, the latter signed two grant agreements totalling US$5.25 million in Marrakech, as part of the Fragile States Facility (FSF) framework. It will also provide US$59 million for technical assistance, funded by the African Development Fund (ADF).[15] Other financiers who have indicated an interest in participating in the project are Agence Française de Développement (AFD), the Development Bank of Southern Africa (DBSA), the European Investment Bank (EIB) and the United States Agency for International Development (USAID). The USAID was considering providing technical assistance to ADPI but at the time of writing, no financial contributions had been made (World Bank, 2014; African Development Bank Group, 2013). The table below gives a summary of the cost breakdown for technical assistance to the Inga project.

[15] The ADB document indicates that the value of the technical assistance funded by the ADF will be US$65 million while the World Bank documents puts it at US$59 million.

Table 2: Project costs structure and financing mechanism

Project components		Project cost (US$ million)	IDA financing (US$ million)	ADB financing (US$ million)
A	**Inga III BC development support**	**80.9**	**47.5**	**33.4**
A.1	Studies	20.0	12.5	7.5
A.2	Advice and procurement support	39.5	19.0	20.5
A.3	Institutional strengthening	21.4	16.0	5.4
B	**Mid-size hydro development support**	**25.6**	**25.6**	**-**
B.1	Mid-size hydropower	19.1	19.1	
B.2	Carbon finance market development	1.0	1.0	
B.3	Institutional strengthening	5.5	5.5	
	Total Project Costs	**106.5**	**73.1**	**33.4**

Source: The World Bank (2014)

According to the World Bank's Project Information Document (2013, 3-4), the Inga project would consist of five components: generation, transmission, distribution, capacity building and project execution. The generation component would entail rehabilitating the existing Inga dams and turbines to improve their operational capacity; this would cost an estimated US$224.8 million. Transmission, on the other hand, would include the construction of a 400 kilovolts (KV) Inga-Kinshasa transmission line to complement the existing 220 KV line – to increase the amount of power to be delivered to the Kinshasa distribution network; this would cost about US$94.0 million. Distribution estimated at US$79.9 million would expand and strengthen distribution lines in Kinshasa and extend the grid into un-electrified areas. In terms of capacity building, it is estimated at US$31.2 million and aimed at strengthening both SNEL and the Ministry of Energy's operational capacity (World Bank, 2013).

Finally, project execution concerns ensuring effective implementation of the project work in an environmentally and socially sustainable manner. This would cost US$34.7 million. A sum of these estimated costs totals at US$464.6 million. According to the World Bank's appraisal document, of this total the DRC government will contribute US$ 10 million; the IDA will contribute US$295 million; the AfDB and other sources will add US$100 million while the European Investment Bank will contribute US$94 million (World Bank, 2013, pp. 3-4). It is important to note that these figures were estimated and approved in the year 2007.

The benefits of the Grand Inga dam cannot be overstated. If completed, the project would yield huge capital returns, address energy poverty in most parts of the DRC and increase the share of renewable energy in Southern Africa's consumption mix (USAID 2015, 18). It would also improve trade, regional integration and international coordination in the Southern Africa Development Community (SADC) region. Constructing new transmission lines and rehabilitating existing ones will improve energy supply in the region and contribute to infrastructure development and a trickle-down effect on the overall wellbeing of individuals. Though the financial requirements for Inga III BC and the entire Grand Inga projects are steep, cooperation between the major funders such as the World Bank, the AfDB, DBSA, European Investment Bank, off-taker states like South Africa and the Government of the DRC, is likely to lead to successful project implementation. The next section analyses each actor involved in funding the Inga dam to identify the nature of the actor, their corresponding interests and how it complicates or eases credible commitment processes.

5.4 Analysis of actors

This section discusses the key stakeholders invested in financing the Grand Inga project. It highlights their characteristics, interests and priorities regarding the Inga project. This discussion is prerequisite in understanding the challenges of credible commitment concerning the dam project. I acknowledge that there are other key players such as the USAID, engineering companies and civil society who were influential and participated in the multi-stakeholder dynamic of the Grand Inga negotiations and preparation phase. However, the actors discussed here are deemed instrumental to the financing the project. This study acknowledges the USAID's contribution as synonymous with United States' interest and represented within the institution of the World Bank.

5.4.1 The International Development Association/ The World Bank

The International Development Association (IDA) is part of the World Bank and complements the Bank's original lending arm – International Bank for Reconstruction and Development (IDA 2018). Its target partners are the world's poorest countries; it is the largest source of assistance for the world's 75 poorest countries, 39 of which are in Africa. The Association has a mandate to reduce poverty by making loans (called "credits") and grants available for programs that boost economic growth, bridge the high levels of inequalities as well as improve the living conditions of individuals (IDA 2018). It provides loans on concessional terms, that is, the credits have a "zero to low-interest charge and repayments are stretched over 25 to 40 years, including a 5 to 10-year grace period." (International Development Association (IDA), 2018). As a multi-issue institution, it supports a wide range of development projects such as primary education, health, water and sanitation, business climate improvements, infrastructure and institutional reforms (International Development Association (IDA), 2018).

Established in 1944, the World Bank Group (also known as World Bank) has and continues to provide financial and technical assistance to developing countries. The Group views itself as offering a unique partnership to reduce poverty and support development, particularly in the developing world. Its 2030 project goals are to end extreme poverty by drastically reducing the number of people living on less than $1.90 a day to at most 3% and foster the income growth of the bottom 40% in every country by promoting shared prosperity. One of the services provided by the World Bank is financial products and services. It provides low-interest loans, zero to low-interest credits, and grants to developing countries (World Bank, 2018). These are used in supporting investments in areas such as education, infrastructure development, environmental and natural resource management, public administration, health, agriculture as well as financial and private sector development. This support is crucial to most parts of the developing world as the cost incurred in developing these sectors often exceed the coffers of the host government since the expertise needed costs a fortune. Technical and financial assistance from the Group becomes instrumental in project implementation thereby leading to poverty alleviation and improving the wellbeing of the individuals in the respective country (World Bank, 2018).

Energy infrastructure development is crucial to the above-stated outcomes. Inga III BC and the Grand Inga dam are energy infrastructure development projects with the potential to reduce energy poverty, improve the wellbeing of individuals and the DRC's domestic economy. The dam project aligns with the mandate of the IDA/WBG.[16] The WBG's rationale for its involvement in developing the Inga III BC and the mid-size hydropower sites in the DRC is premised on: the project's potential in providing cost-effective energy services to households and businesses and secondly, the Bank's convening power and multidisciplinary expertise would provide support to the government and (non-) existing institutions to ensure project implementation (World Bank, 2014, p. 5). These rationales align with the Bank's objective and the Sustainable Development Goals (SDGs).

Given the poor access to energy for households, the rehabilitation of the existing Inga Dams, transmission and distribution lines coupled with the construction of Inga III BC will increase access to electricity. The Bank Group posits that this project would be used as a "litmus test" for developing the structures (institutional, legal and financial) necessary for subsequent phases of Inga hydropower development to be executed. By providing the appropriate legal and institutional framework for protecting both public and private interests, it creates an enabling environment for investments by boosting investor confidence in partaking in the project (World Bank, 2014).

To reiterate, the World Bank will provide a sum of US$73.1 million to fund technical assistance for the Grand Inga project. This fund excludes construction and operational cost for the project. The Bank has not indicated if it will support the construction phase of the project. It is assumed that the Bank's decision to participate in the construction phase will be dependent on the DRC government's commitment to Grand Inga and its ability to meet the Bank's expectations (Gasparro, 2017). The World Bank's incentive and interest in the Grand Inga project is that it meets the objective and overall mandate of the institution – to reduce poverty and bring about development, simply put. The DRC's institutional and legal framework is weak and riddled with corruption. The successful implementation of Grand Inga is dependent on a strong institutional and legal environment, creating and enabling space for all stakeholders to

[16] The IDA and the World Bank Group will be used interchangeably since the former is an arm of the later.

cooperate and meet their end of the bargain to achieve the overarching outcome of dam construction and operation.

This is the importance of technical assistance to the DRC government – to create the enabling environment, institutionally, for project implementation. As part of the Bank's requirement, an independent authority[17] to oversee the different phases of the project as well as attract public and private investments was to be established. The ADEPI was to be established to meet this requirement and mandated to oversee the Grand Inga project. According to the World Bank, the organization was to report to the Prime Minister's office with a Board of Directors that represents various Inga development stakeholders (World Bank, 2014).

A technical paper by the African Union indicates that the DRC government *recently*[18] decided to change the Grand Inga concept from a 4,800 MW capacity dam to 12,000 MW (African Union 2018, 3). The government has also requested the two consortia left in the bidding process to submit a joint optimized project proposal, which is expected by the end of the first quarter of 2018. The new proposed project concept of 12,000 MW will require a review of the concluded technical studies and the need to begin complementary studies such as Environmental and Social Impact Assessment studies. A review and consideration for the commercial prospects of the extra power to be generated would be required in order to sustain the bankability of the Grand Inga project: new power market and partner countries need to be identified and agreements secured (African Union 2018, 4). Technical assistance is documented as expenditure by the lender, especially development banks. Although there are efforts to change the dynamics of technical assistance to make them repayable, the 4% of the fund already disbursed for the Grand Inga constitutes expenditure to the World Bank (European Investment Bank, 2018).[19]

[17] The organization would function independent of the DRC government and the country's electric utility SNEL.
[18] The date on the technical paper is unavailable; hence 'recently' is assumed to be between 2015 – 2016.
[19] This information was sourced from an interview with a respondent from the European Investment Bank, in 2018.

5.4.2 The African Development Bank

The African Development Bank established in 1963 but began operations in 1966, seeks to promote economic growth and social progress across the African continent (African Development Bank Group 2017). The Bank's agenda is to provide financial and technical support for transformative projects that will significantly reduce poverty through inclusive and sustainable economic growth. One of its sectorial priorities is improving generation and access to energy to improving the quality of life for the people of Africa (African Development Bank Group, 2017). It provides non-concessional loans to regional Member States as well as policy advice and technical assistance in support of its respective development efforts. It has a mandate to support the economic development of all African countries and the promotion of social progress. This is achieved through promoting the investment of public and private capital in projects and programs designed to reduce poverty and improve living conditions (African Union, 2018).

The AfDB has labelled the Grand Inga project a driver of regional cooperation. Furthermore, a country strategy paper by the AfDB (2013b) argues that private investment and regional integration should be the pillars for the DRC's future economic strategy. The paper posits that the DRC's strategic options are guided by the privileged geographical location of the country, which "offers exceptional regional integration-regulated benefits, especially in terms of commercial exchanges with the other countries of the region" (2013b, 44). It recommends that the DRC government provide an institutional framework to facilitate private investment in the country's energy sector.

The Bank's financial contributions to the Inga project for technical assistance is US$33.4 million (The World Bank 2014, 16). Prior to this, the Bank's financing for its Inga Site Development and Electricity Access Support Project (PASEL) was approved on 20 November 2013 including US$7.7 million from a Fragile States Facility (FSF) grant; and US$60.6 million from an African Development Fund (ADF) credit (African Development Bank Group 2013). The PASEL is aimed at finalizing the preparation of the Grand Inga project and implanting actions that will enhance electricity access for the Central and Southern Africa regions (African Development Bank Group 2013). PASEL will facilitate the development of institutions and skills making it possible to improve the structuring of Grand Inga to select an investor-

entrepreneur under a public-private partnership. Despite the World Bank suspending further disbursement of funds for technical assistance, the AfDB has pledged to continue in project implementation (African Development Bank Group , 2013). AfDB has a strong interest in seeing the project reach fruition.

5.4.3 The Development Bank of Southern Africa

Established in 1983, the Development Bank of Southern Africa (DBSA) seeks to play a strategic and crucial role in the fostering the provision of developmental infrastructure in South Africa and the rest of the African continent. It provides investment finance for project development in the region. In its attempt to improve the (socio) economic wellbeing of the region, the organisation effectively integrates and implements sustainable development solutions to improve the quality of life of people through the development of social infrastructure; support economic growth through the investment in economic infrastructure; support regional integration; and promote sustainable use of scarce resources. As a development finance institution (DFI), the Inga projects present a potential for investment in infrastructure that would bring about an improvement in the wellbeing of the people of the DRC and SADC, *clean* energy security in the Southern Africa region and further integrate the region through cooperation between the respective states (Development Bank of Southern Africa 2013a; Development Bank of Southern Africa 2013b).

The DBSA's role in the Grand Inga project is to provide the finance necessary to fund studies for the expansion of transmission lines and substation as well as electricity dispatch and import modalities for the Inga III BC electricity output (Ruiters, 2018). The DFI is not investing in the technical assistance for the construction of the dam and has not indicated interest in funding the construction and/operational phase. Its role as of the time of writing is to assess the feasibility of transmitting electricity from the *completed* dam (Grand Inga) to South Africa through the regional power pool. Ruiters (2018) posits that the DBSA has only been approached by Eskom, the South African electric utility and asked to perform this role.

As of the time of discussion regarding the feasibility studies project in 2016, nothing has been accomplished in terms of a clear date in sight towards the dam construction phase and signing of agreements to this end (feasibility studies). As of the time of the interview, the DRC

government had decided to change the scale of the Grand Inga dam from a 4,800 MW to 12,000 MW – which would require new feasibility and complementary studies. She argues that this has further delayed and complicated plans to push the project forward. She states that the DBSA is one of the parties in an open tender to bid for the transmission feasibility studies contract. As of March 2018, the process had been put on hold considering that Grand Inga will be developing Phase A, B and C. This implies that with the increased amount of output, new negotiations are taking place and South Africa might get more than the Treaty stipulates; however, all negotiations (as of this time) are on hold (Ruiters, 2018). For such projects to work, there needs to be an agreement between Eskom, the DBSA and the government of the DRC as well as its electric utility SNEL to allow for studies to effectively ensue.

The credible commitment challenges this pose is centred around holding the host government (the DRC government) and governments through which the transmission lines will pass to commit to allowing the studies and the project implementation take its course. Also, since Eskom tabled the project before the DFI, the former will be liable for repayment of loans granted for the studies. She argues that in such a large-scale and complex project with a multiplicity of actors, there are legal documents in addition to the agreements that go beyond change of government in any of the countries involved that enforce credible adherence. In a case where government still reneges and investments have been made, they count the cost as a loss (Ruiters, 2016).

5.4.4 South Africa and Eskom

In 2007, the governments of South Africa and the DRC signed a Memorandum of Understanding (MoU) which commits the former to off-take 2500 MW of the 4800 MW the Grand Inga was originally purposed to generate. On November 2011, the Ministers of Energy from both the DRC and South Africa signed a MoU on the phased development of Inga. During the October 2013 state visit to the DRC, President Zuma and President Kabila signed a treaty on Inga governing the electricity trade between the two countries (South African Government, 2013). South Africa has been active in pushing for the construction of the Grand Inga dam for

several reasons. The country's electricity interest in the DRC has been projected in partnership with its electric utility Eskom and the Department of Energy.[20]

Aside from the country's Ubuntu foreign policy, which could arguably be the underlying reason for its involvement in the Inga dam development process, it has a vested interest in seeing the project implemented. South Africa's role in the Grand Inga project is an antinomy – an energy-grabbing hegemon and a creditworthy partner. As a regional hegemonic power, it is in South Africa's interest to extend its sphere of influence outside its geographical boundaries. Sebastian and Warner (2013) adopt this argument in assessing South Africa's quest for land and water resources particularly in the SADC region. They argue that as a powerful, developed, economically robust and water-stressed nation, South Africa has emulated its Western counterparts in the globalization of water security and geopolitics (Sebastian & Warner, 2013, p. 9).

They posit that investments in water-rich neighbouring countries like Lesotho, the Republic of Congo and the DRC all illustrate RSA's quest to control physical and virtual water – using water as a political good and a lever for wielding power in the Southern and East Africa region (Sebastian and Warner, 2013). To these scholars, where the securitization of water [or land] is concerned, the more aggressive foreign state investors become, especially those faced with real time shortages of the scarce resources. This behaviour they term "water grab" (Sebastian and Warner 2013, 10). I adopt this argument in assessing South Africa's energy security pursuit outside its borders, particularly in the SADC and East Africa region. South Africa is a power-stressed country. Electricity shortages were at their worst in 2008; incessant blackouts due to dilapidated coal-fired plants and the new need to build new ones to cater for the country's growing energy demands. The power sold to Eskom will be a low-carbon alternative to meet power demand growth in the country. As the World Bank posits, without electricity imports, South Africa has few alternatives to construct new coal power plants (World Bank 2014, 9). The quest to secure *clean* energy sources further drives the country's foreign policy.

[20] The government of South Africa, Eskom and the Department of Energy will be used interchangeably as they all have the same interest in participating in the development of Grand Inga and the Grand Inga dam.

According to the World Bank, South Africa is a creditworthy partner whose participation in the Inga dam development project, through its commitment to buy the dam's output, can increase the project's bankability (World Bank 2014, 9). This would provide some level of surety to investors; particularly private investors weary of the high levels sovereign risks in the DRC. Eskom in the past years have been under scrutiny in the public eye for alleged cases of corruption and misappropriation of funds. The scheduled black outs in 2008 further threw the utility's credibility into jeopardy. Having an alternative energy source that would bolster the utility's supply base, at a relatively affordable cost, could potentially lead to regaining the public's trust and distract from the lurking corruption allegations. Having underscored South Africa and Eskom's interest in the DRC, these interests can only be materialized once the dam is constructed and fully operational. With the current change in the dam capacity potentially affecting the original design of the project, these actors are likely to get more than the originally agreed 2500 MW. The challenge remains how to ensure that the government of the DRC adheres to the *new* treaty and follows through on the agreement in future.

5.4.5 Government of the DRC and SNEL

Of the US$14 billion initial cost for Grand Inga, the government of the DRC was expected to contribute US$3 billion to the project, obtained through concessional loans (Nevin, 2017). Other than the AfDB and the World Bank pooling funds for the technical assistance, the project has struggled to attract funding. It can be argued that this struggle is a result of country and sovereign risks as well as red tape and disagreements between the Congolese government and its partners on the project. The project, which was expected to be completed and operational by 2020 or 2021, has further moved to 2024 or 2025 (Theron, 2017; Reuters, 2017).

The GoDRC is adamant about its intention to construct the Grand Inga dam irrespective of the setbacks it has encountered in developing and implementing the project. Following the World Bank suspending financing the project in 2016 and the DRC's proposal to expand the Grand Inga to produce 10,000 to 12,000 MW of electricity, which requires new Environmental Impact Assessment (EIA) studies, the government is willing to push forward, nonetheless. Bruno Kapandji, the director of the ADEPI reportedly said the government intends to assume the construction phase of the dam without conducting the necessary EIA studies (Bungane, 2016).

The government has a strong interest in constructing the dam. Bruno Kapandji reportedly stated, “Inga 3 is here to meet a need… Inga is a Congolese project located in Congo, you have to think as a Congolese, as a Congolese we have no choice but to build Inga 3. And for the cities in Kinshasa, Bas-Congo and Katanga, Inga 3 is the only solution” (Bungane, 2016). His comments emphasise the urgent need to alleviate energy poverty and improve access in the country. He added, “Inga 3 will produce almost 3,000MW; 1,000MW in the region and a 1,000MW in the south for the mines.” Mining makes up a large part of the DRC’s economy and the importance of energy in that sector cannot be overstated (Bungane, 2016).

Several conclusions can be drawn from these comments: given that the project has now been co-opted into the presidency, it can be argued that Joseph Kabila had a grand development agenda for the DRC. His presidency suffered blows and criticisms from citizens and abroad on the lack of improvement in the wellbeing of the Congolese people. The country’s vast natural resources have so far benefited a few elites and the rent has not been equally distributed to benefit the ordinary individual. It is likely that Inga 3 offers an opportunity for redemption for Kabila’s presidency, having recognized the strategic importance of energy to economic and human development. If a sizeable project such as Grand Inga gets built and becomes successfully operational under Kabila’s presidency, there is a likelihood that the ordinary citizens may ‘vote’ to retain him in power to ‘complete the good work he has started.’ It would also prove to the world that Congo is capable of managing its affairs despites issues of bad governance, weak institutions, and poor economic indicators. This could potentially lend credence to other dictators or quasi-democracy governments in the region – starting a craze to build large development project as a trade-off for continued stay in power.

The defiant quest to proceed with Grand Inga despite the disapproval of most international and environmental organisations, stating the importance of prioritizing the country’s needs over *foreign* and *imposed* transparency and governance indicators could further lend credence to the above-stated craze. This defiance could arguably be fuelled by the fact that China as a non-traditional/Western loan provider has in the past supported SSA countries with finance to fund their development projects having been rejected by their western counterparts and institutions. This is evident in the DRC’s request for the two consortia left in the Grand Inga bidding process, which happens to be China Three Gorges Corporation and Spain’s Actividades de

Construccion y Servicios SA (ACS), to submit a joint bid (Reuters, 2017). This indicates that the government of the DRC is intentional in pursuing Chinese funding for the project. Kapandji was reportedly quoted saying that Chinese companies could complete the project in a "maximum of five years and if they're free to do whatever they want to do they can even do it in four years." (Reuters, 2017). From this statement, it can be deduced that appointing a Chinese consortium to partake in the dam construction is a trade off or an enticement for Chinese financing.

It is important to note that most World Bank official documents, particularly the appraisal document, enlist the European Investment Bank (EIB) as a potential financier of the Grand Inga project. Upon conducting interviews with a representative from the institution, it was established that the EIB is not involved in funding the technical assistance phase of the dam but will consider prospects of the actual dam construction (European Investment Bank, 2018).

According to the official, the EIB offers support for such large-scale project and would likely be involved in future – given that the ground work in terms of feasibility and complementary studies have been completed and all the institutional frameworks required for efficient implementation is in place as well as a buy-in from all partners involved. The respondent indicated that the EIB offers commercial loans and in such a large-scale project would be likely to be involved from the planning phase because of the strict requirements they have in the implementation of such projects (European Investment Bank, 2018). It is important to note that competition amongst these actors occur against the backdrop of citizens' interest in seeing the Grand Inga completed and operational. The Grand Inga project development offers hope to the citizenry of more access to electricity and by extension, improvement of their living conditions.

Owing to the public good nature of electric outputs, there is an expectation that the government through this project would supply households (not just industrial areas, mines or other countries) with electricity. The credible commitment problem between the host government and the citizenry goes both ways. For the citizenry, it is how to ensure that they are beneficiaries of the electricity generated by the Grand Inga dam. For the government, the concern is how to ensure that the citizenry do not disrupt transmission lines passing through their towns, cities or villages, taking electricity to the regional grid or to an off-taker state.

An overview of the DRCs electricity consumer-base indicates that while there are more households in demand for electricity than industrial areas, the ability to pay for the commodity rests largely on the industrial sector and well-to-do households. With more than half of the population living on less than $1, recovering service fees from such household may prove challenging. Hence, it is rational for the government to sell most of the output to regions, households and countries that can afford to pay for it. But, bypassing certain groups of people or certain villages could prove detrimental in future. Historically, electricity generation was mainly to serve the needs of the mines particularly in the Katanga province. In this post-independence era, with a growing politically savvy population, such actions may be detrimental to the government's political and economic ambitions.

5.5. Credible commitment problems in the Inga dam case study

To reiterate, commitment is the willingness to be bound to a course of action or inaction. It is not sufficient for actors to indicate willingness; they are required to persistently choose strategies that facilitate the accomplishment of the set goals. Problems emerge when actors choose strategies that undermine the collective goal while according them short-term gains. In the case of the Grand Inga, negotiations and the subsequent signing of agreements between the government of the DRC and key investors was indicative of the government's willingness to cooperate. Considering that Kabila's regime is notorious for kleptocracy, corruption and authoritarianism (Lezhnev, 2016), his indication of willingness suggested that he had a strong interest in developing the project while favouring transparency and accountability in the procedures. With such level of commitment, the idea of the project being an illusion (Hathaway, 2005) or a fantasy (Warner, Jomantas, Jones, Ansari, & de Vries, 2019) would be disproved. This provided a gleam of hope that the project will finally be implemented as demonstrated by news headlines such as *Inga closer to becoming reality* and *The Inga III Dam: Solution to Africa's "energy apartheid"?,* and the adoption of the project as a priority in the African Union's New Partnership for Africa's Development (NEPAD) framework.

However, the World Bank's withdrawal from the project would dash any hope of Grand Inga being a reality. In 2015, Kabila had established a parallel institution to manage the affairs of the Inga project. This organisation was called the Inga Committee comprising of

representatives from the President's office and the Prime Minister's office (Congo Research Group and Resource Matters, 2019). Its mandate was to take over the CGI3 which was tasked with the implementation of the technical assistance phase of the Grand Inga project. Also, the ADEPI, intended to be a ring-fenced institution, was not established according to the guidelines of the World Bank. Rather, it was co-opted by Kabila and the name changed to ADPI-RDC (or ADPI-DRC). Under this institution, he was able to regain autonomy over decision-making processes as well as hire his choice of candidates to fulfil the mandate of developing the Grand Inga according to Kabila's requirements. This saw the installation of the current head of the institution and former Minister of Energy, Bruno Kapandji (Congo Research Group and Resource Matters, 2019). Thus, Kabila's defection from the initial agreement with the World Bank constituted the origins of credible commitment problems in this case study.

Credibility problems in the Grand Inga case emerged because of two main reasons, namely uncertainty and the number of stakeholders involved in the project. It does not imply that other factors such as the nature of investment decisions and the characteristics of megaprojects are not applicable. However, I argue that these two factors capture the problem to a greater extent. Uncertainty pertains to the inability of actors to predict future events (Coyne and Boettke 2009). Individuals are unable to determine with certainty what the preferences and actions of actors will be at a later time, and what occurrences will shape their inclination to change or maintain their respective strategies (Koremenos, 2005). For example, the plan to resuscitate the Grand Inga project was followed by overwhelming support from key states and institutions including international financial institutions like the World Bank, the African Development Bank, South Africa and the U.S. through the USAID. However, the U.S. had to change its strategy owing to anti-large dam sentiments.

In December 2013, a representative from the USAID visited the Inga site and pledged financial support for the project. This visit was a part of Barack Obama's Power Africa Initiative to improve electricity access in Africa (Misser, 2014). However, unforeseen events would change the preferences and strategies of the USAID about the financing of the Grand Inga project. Anti-large dam sentiments as promoted by prominent Non-Governmental Organizations (NGOs) in the U.S. influenced the American Congress decision to withdraw its commitment to fund the Grand Inga project (Misser, 2014). Thus, uncertainty about the financial backing of

the U.S. and by extension, the World Bank enabled the emergence of time inconsistency problems.

Activism against large dams is centred on the controversial nature of the project. While such dams have immense associated benefits, they could equally be costly without proper planning and coordination. In most developing countries, hydropower accounts for the majority share of renewable energy production and consumption. Yet, these countries have vast untapped potential to meet the growing domestic demand. But several NGOs, activists, anti-large dam institutions and the likes have magnified the inefficiencies of large dams, especially in the developing world. For instance, International Rivers Network (IRN), a US-based NGO has been at the forefront of campaigns against World Bank-funded large dam development in the developing south (Shoemaker & Robichaud, 2018).

This single-story narrative undermines the benefits of large dams to the socio-economic wellbeing of the people. And, the concerns raised by activists can be adequately managed through effective and coordination. The fact that this narrative shape the perception and the investment decisions of key actors implicitly reinforces the argument about how Western perceptions (knowledge) shape the development discourse of the global South. As a result, the developing world is often *spoken for* rather than *spoken to*. Given the prioritisation of the NGO's agenda as opposed to the development needs of the host country (even though feasibility studies were underway), the U.S. withdrew support for the project and implied that the World Bank followed suit. As Misser (2014) notes, a notice was sent to international financial institutions informing them of the US's opposition to investments for large dam development in the global South. According to Bruno Kapandji, the U.S's position accounted for the World Bank's withdrawal from the Grand Inga project (Congo Research Group and Resource Matters, 2019).

Uncertainty about Kabila's behaviour prompted the stringent conditions to which the funds were tied. However, these conditions would become the reason for his defection in 2015. Among other things, Kabila's regime was synonymous with corruption. During his tenure, the DRC ranked 154th out of 174 countries on Transparency International's Perception of Corruption Index (Haider & Rohwerder, 2015). With such a track record, it is only rational for

investors to take measures to protect their investments from political risks and minimise any avenue for opportunistic behaviour. Thus, the World Bank resolved to take away agency or decision-making power from Kabila and placed it within the office of the Prime Minister, Matata Ponyo Mapon alongside a select Board of Directors (World Bank, 2014). Although this strategy was meant to prevent corruption and foster transparency and accountability in the development of the project, instead it constituted the basis for Kabila's defection.

Other than uncertainty, the number of stakeholders involved in the Grand Inga project explains the emergence of credibility problems. All stakeholders including those not enlisted above such as the mining sector in the DRC and the population have an interest in the development of the project. However, their preferences or intentions regarding the project differed. For Joseph Kabila, it was important to maintain the autonomy of its regime and its ability to make decisions regarding all sectors within its territorial jurisdiction. In contrast, the World Bank's preference was for Kabila to be excluded from the project as a prerequisite for transparency and accountability. The AfDB, on the other hand, had a preference for the completion of such a flagship project under its mandate which is to contribute to the sustainable economic development and social progress of its regional members individually and jointly (African Development Bank, 2020).

South Africa, a major off-taker of the electricity wanted the Right of First Refusal (RoFR) which is a contractual option where it is granted the right to consummate a transaction before any other party or buyer can be considered (Klein, 2019). The mining sector's preference was to have cheap electricity supply to ensure its effective operation whereas households wanted increased access to affordable electricity. Affordable would take into consideration the economic capacity of the populace where an estimated 78 per cent of people live below the poverty threshold (World Bank, 2019). Thus, the mining sector in the DRC is economically buoyant enough to pay electricity tariffs as opposed to households. These contradictory preferences and Kabila having to prioritise certain actors over others contributed to a breakdown in cooperation. The head of the ADPI echoed this argument in his statement saying that Inga belongs to the Congolese people and would serve the development needs of the people (Bungane, 2016). These preferences will be further discussed in relation to how to establish credible commitment.

Kabila's defection constituted a time inconsistency problem. I argue that at the time of signing the agreement, Kabila's major concern was implementing the project under the auspice of his regime. At that time, the World Bank was the only viable source of dam finance for project implementation and the implications of the conditions may have seemed far-fetched given that the officials in the office of the Prime Minister were his ally or choice candidates. However, as implementation took its course, it became apparent that his agency on the project had been undermined. Also, the habitual ability to siphon funds for personal gains or influence the proceedings of the project were largely restricted. Thus his defection constituted kickbacks against the institution for undermining his opportunity to benefit from the project. Although the option to credibly commit incentivised Kabila's indication of willingness to comply, he opted for an alternative strategy (defection) as the project implantation advanced.

Another form of credibility problem is the lack of a supranational authority to act as a credible enforcer. The role of this authority would be to incentivise compliance and punish defection; it is synonymous to the role of law enforcement in any given country but on a supranational scale. To a certain extent, I argue that this would have potentially served to dissuade defection by the government of the DRC. In reality, commitment is self-enforced. In international cooperation where sovereign states and institutions interact, compliance is tacitly left to the discretion of the participants. They are entrusted to self-enforce the agreement without an international agreement enforcer. Resultantly, the pursuit of opportunistic behaviour becomes attractive and often, especially in a sunk cost industry, leads to a breakdown in cooperation. Cognisant of this problem, actors within a cooperative arrangement often pre-empt credibility problems and take measures to prevent or if unavoidable, address them.

To some extent, I argue that Kabila's commitment was cynical. With an understanding of the inability of the World Bank to effectively enforce agreement (like the police would in any given country), the best course of action should the DRC defect would be to opt out of the agreement. The consequences are minimal for the DRC because investments have been made (although only 4 per cent) by the World Bank into the project. Also, the World Bank would not withdraw from its other commitment to the DRC in other sectors as a result. This created the incentive for defection. Kabila's administration viewed the World Bank's terms as stringent (Congo

Research Group and Resource Matters, 2019) and ultimately behind closed doors searched for an alternative financier. A financier whose interest is on the economics and feasibility of the project as opposed to the political and by extension structural and institutional constituency of the host country would be favourable to Kabila. Thus, following the Bank's withdrawal in 2016, it was no surprise that China became the second-best but the most preferred option for the government of the DRC. Even though Kabila indicated a willingness, and to some extent followed through with persuasive communication, persistence in strategy would be costly for Kabila's interest in the future. It became rational to pursue an alternative source of funding with less stringent conditions and no interest in the politics of the country.

Thus far, I have demonstrated that uncertainty and the number of stakeholders involved in the Grand Inga project created an enabling environment for credibility problems to emerge and thrive. The problems characterised by time-inconsistency, lack of supranational authority, and cynicism were discussed and inference drawn from the narrative. Following this, the puzzle on how to establish credible commitment would be discussed. Again, the discussion will draw on the narrative surrounding the Grand Inga project and assess the mechanisms employed to prevent and/or address credibility problems. This assessment will be made drawing on the arguments made in the literature pertaining to the three 'Is': interest, iteration, and institutions.

5.6 Establishing credible commitment in the Grand Inga case

In this section, I examine the mechanisms used to prevent or address credible commitment problems in the Grand Inga case against the arguments made in the literature. The mainstream arguments are compatibility in the interests of the collaborating parties, the need for iteration to build a credible reputation, and the role of institutions in providing constraints to potential opportunistic behaviour. This assessment enables one to determine the goodness of fit that is, the extent to which the case observed (Grand Inga) fits the arguments in the literature on how to establish credibility. Any anomaly will be accounted for.

Interest is a key determinant of strategic behaviour. The interest of an actor is synonymous with his preferences or intentions and becomes manifest through actions or strategic behaviour. In the pursuit of self-interest, self-preservation becomes the dominant strategy. That is, actors

are constantly in search of opportunities to maximise personal gains most times, at the expense of others within the arrangement. To this end, self-interest that is, the pursuit of opportunism with guile undermines collective action. Whereas, when the interest of an actor is compatible with other parties within the initiative, interest tends to promote collective over personal gains. The dominant strategy, in this case, becomes altruism – where actors subdue the penchant to seek self-gratification in pursuit of attaining the collective goal. Thus, in any collaboration, the interest of actors is a given. The extent to which they negatively or positively affect cooperation outcomes depends on compatibility.

But the compatibility in the interest of actors becomes challenging to ascertain in multi-stakeholder cooperation. The problem becomes more complex if it is long-term investment collaboration in a sunk cost industry like the electricity sector. This challenge is mirrored by the Grand Inga case study. The key stakeholders participating in the Grand Inga project had an interest in seeing the completion of the feasibility studies as subsequently, the construction and operation of the dam. However, the means to the end varied across the various stakeholders. Joseph Kabila's interest was to have the project built during his regime with as little cost as possible to his political aspirations.

It is important to note that host governments as rational actors strategically choose options that yield more benefits than costs to them. That is, governments are attracted to agreements that entail less cost (of defection) but more incentive – this motivates the political will and commitment towards a given agreement or cause. When agreements tend to be costly that is, require *uncomfortable* adjustments from the (host) government, they are less likely to credibly commit. On the flip side, investors to guarantee returns on investments tend to make cooperation more costly than 'incentive-driven.' While it bodes well for the investor and probably serves to attract other investors especially from the private sector, it undermines the government's self-enforcement capacity. The government often tends to act opportunistically and deal with the consequences later while in search of alternatives that are compatible with its interest.

For example, in the Grand Inga case, Kabila wanted the office of the presidency involved in the dealings of the project" for two main reasons. Firstly, the energy sector is strategic to any

country's economy. The World Bank's clause to have the sector set up outside the office of the Presidency I argue, constituted a threat to Kabila's interest and his regime security. Consequently, the powers and duty of the President in relation to the project were passed onto the Prime Minister. Although it can be argued that the Prime Minister was handpicked by Kabila and served under his regime thereby promoting the interest of Kabila's regime, uncertainty about future occurrences undermines the ability to argue with certainty that he would have acted in Kabila's interests. Secondly, the terms of the agreement would undermine any avenue for opportunistic behaviour by Kabila. For example, one of the conditions of the agreement concerning the ring-fenced institution stated that all staff members including the Director would be competitively recruited (World Bank, 2014). This implied that the modus operandi of hand-picking and placing choice candidates in strategic positions by Kabila would be discontinued. This lends credence to the argument that the terms of the agreement were cumbersome to the extent that the processes of the project implementation were meticulously conducted, preventing any prospect of expropriation and corrupt practices by Joseph Kabila and his political elites (Congo Research Group and Resource Matters, 2019).

By 2015, the then-president Joseph Kabila set up parallel institutions to manage the affairs of the Grand Inga project (Congo Research Group and Resource Matters, 2019). It is documented that the president set up an informal organisation called the Inga Committee with the main purpose of monitoring the CGI3 coordinator who was accused of being "too close" to the international financial institutions (Congo Research Group and Resource Matters, 2019). Towards the end of the year 2015, Kabila had established a similar institution named the ADPI-DRC to manage the affairs of the Inga project (The World Bank, 2018). This was done without prior communication or consultation with the World Bank. The institution consisted of his chosen candidates and the former Minister of Energy; Bruno Kapandji was installed as the head of the organisation. All institutions established before 2015 to oversee Inga's proceedings were dissolved (Congo Research Group and Resource Matters, 2019).

Another interesting development was the timing of Kabila's defection and the World Bank's withdrawal. In May 2016, Kabila managed to get the court to rule in favour of his continued stay in power until a successor was chosen (Aljazeera, 2016). By July 2016, the World Bank announced its suspension of funds for the Grand Inga technical assistance phase and by

September the same year, it withdrew from the project (The World Bank, 2018). The Presidential elections in the DRC were due to hold in December 2016 but it was delayed. This delay can be explained as a period where the former president considered his options for a third term to fulfil the plan of having Inga represent a flagship project to his regime. His tenure expired 20 December 2016 but following the announcement of his refusal to step-down, elections were postponed (Mohamed, 2018). He only ceded power two years later, in 2018. Thus, it can be argued that the turn of events as explicated above emphasises the World Bank's reason for withdrawing from the project – the government had taken the project in a different strategic direction. Considering that the Bank is an embodiment of neoliberal principles, Kabila's move to extend his stay in office despite having ruled for two consecutive terms contrasted with the ideals of the World Bank. This, I argue, contributed to the World Bank's decision to withdraw from the project.

In relation to the Grand Inga project, the World Bank as a multilateral financial institution is not merely concerned about the project development per se, but in the processes leading to the end goal. To this effect, the mandate of the Bank expands beyond providing funds for development projects to include helping countries restructure their domestic institutional and legal capacity. This enables them, in the long run, to independently attract investments while having institutions of accountability and transparency to avert political risks, and to ensure that the newly developed project works effectively and in synergy with existing domestic institutions. Having such frameworks in place attracts investments particularly private investments – giving them some level of assurance that there are mechanisms in place to protect their interests by deterring or punishing reneging by the host government. It further increases the ease of any form of a development initiative, particularly infrastructure development. Also, such mechanisms allow for the efficient operation of the Grand Inga for instance where funds from the sale of the output could be transparently collected and accounted for. Similarly, the World Bank is concerned about the environmental and displacement impact of such development projects. The Bank's goal is to alleviate poverty and improve the wellbeing of individuals – poor environmental conditions and the uncoordinated removal of people from ancestral land and homes work against such goals. Conclusively, a strong institutional and legal framework creates a firm foundation for project implementation – this encompasses the interest of the World Bank.

The AfDB like the World Bank also prioritizes the institutional and legal capacity of the DRC to manage such a large-scale project; however, it tends to be more concerned about project implementation because of its potential to increase access to electricity in the DRC and in the region. It can be argued that the development ramification of the dam is the AfDB's priority. The benefits associated with the Grand Inga project would lend credence to the Bank's development goal in the continent. This is deduced by the continued support the Bank offers to the DRC despite the World Bank suspending further fund disbursement for the purpose of the project (Fabricius, 2016). The author reached out to the institution to get clarity on its position given the new direction the government of the DRC has decided to take the project but there was no response. This inference is drawn from statements made by AfDB following the above-mentioned course of events. The DBSA, South Africa and Eskom have similar interests and priorities where Grand Inga is concerned. South Africa and Eskom seek *clean* energy security that would provide access and meet its growing domestic demand. It would also relieve pressure off its coal-fired stations and allow new stations to target energy-poor regions. The DBSA has an interest in seeing the Inga project materialize because it implies that some commercial loans would be given to off-taker countries to build transmission and distribution lines from the Inga site, through the SAPP, into their respective countries.

Thus, the interests of all stakeholders involved tended towards the development of the project; however, there was a discord in the means to the end. While interest featured as an important explanatory variable on how to establish credibility, two key lessons can be drawn. Firstly, compatibility in interests among the stakeholders is key. However, this should extend beyond a mere agreement on the collective goal to include the strategies or steps towards achieving the goal. In the case of the Grand Inga, the government and the World Bank although pursuing the same collective goal, had varied strategies. Secondly, where such strategies complement an actor's self-interest, credible commitment becomes self-enforced. And the reverse is the case when it is not. This logic cannot be generalised considering that the self-interest of actors can be detrimental to the collective goal. However, in this case, some level of autonomy with strict measures that incentivise credible commitment as opposed to threatening Kabila's regime might have yielded a different result. Thus, to a large extent, self-interest and the extent to which there was harmony between the fragmented actors demonstrates the breakdown in credible commitment and cooperation. Nonetheless, the true interest of actors is made visible to others within a cooperative arrangement through repeated interaction.

Iteration involves more than a once-off interaction between the investors and the host government. In a multi-stakeholder arrangement, repeated interaction is essential in enabling check-and-balance. In the case of the Grand Inga project, interaction to keep all stakeholders on par with developments were consistent. This strategy served as both persuasive communication and an indication of the DRC's willingness to credibly commit to the negotiated terms of agreement with the World Bank. But iteration between the parties was unable to guarantee credible commitment mainly because the interest of the host government was in contradiction to those of the stakeholders in the collaborative arrangement.

In the case of the Grand Inga, it features less as an explanatory variable. By mid-2013, several institutions such as the CFI, the CGI3 and CODESI had been set up according to the terms of the agreement. These institutions enabled the near-constant interaction between financiers, developers, experts, potential buyers and government representatives of the DRC on the progress of the dam development (Congo Research Group and Resource Matters, 2019). Yet, such repeated interaction resulting in information sharing was not sufficient in establishing credible commitment by Kabila's regime.

As a counterargument, one can assert that the repeated interaction between the institutions and the stakeholders per se without the interference of an external actor, in this case, Kabila tended towards credible commitment. It can be argued that the Prime Minister, Matata Ponyo Mapon together with heads of other sub-organisations were dedicated to establishing a credible reputation. This is demonstrated by the policy letter sent to the funders in November 2013 to assure them of the DRC's commitment to establishing the key institutions, equitable apportioning of electricity output between foreign off-takers and domestic consumers, efficient use of public finance and the competitiveness of developers among others (World Bank, 2014, pp. 90-94). Notably, given that the then President Kabila had signed an agreement with the World Bank, it was in their interest to prove and represent the interest of Kabila's regime as being compliant with international good practices such as transparency and accountability; a trait less associated with the regime. Thus, the usefulness in repeated interaction serving to curb credibility problems and locking the host government into the agreement was undermined by Kabila's pursuit of self-interest with guile (Williamson, 1991).

Institutions are the rules of the game; they incentivise and constrain any form of expropriation. In the case of the Grand Inga, institutions were established, and existing ones strengthened, to ensure that credibility problems are avoided. Often, investors when dealing with politicians on a proposed development project, anticipate credible commitment challenges. In anticipation, they tend to put measures in place to protect their assets and if necessary, punish the host government for defection. Credible commitment challenges arise when actors are unable to guarantee their commitment to an agreement in the foreseeable future. With regards to large sunk asset investments like the Grand Inga Dam, credible commitment is a prerequisite to attract finance for such projects. In a case where the government of the host country is unable to provide such guarantee, where the strength or weakness of its domestic institutions to uphold accountability, transparency and efficiency in implementation is lacking, actors attempt to create an independent institution either outside or in partnership with existing domestic laws and policies, to manage credible commitment challenges. In the case of the Grand Inga, several institutions were established to oversee the implementation of both the technical assistance phase of the project and subsequently, its construction and operation.

An important prerequisite for successful infrastructure development is good governance. The World Bank defines governance as constituting traditions and institutions by which authority is exercised in a country (The World Bank 2013, 1-2). As per the energy sector, good governance is synonymous with a "stable, transparent, and participatory modes of energy policymaking, inclusive markets and institutions, sound policies for licensing or permitting of infrastructure, high levels of accountability, and rule of law," all of which enables energy structures to function effectively (Green, Sovacool, & Hancock, 2015, p. 140). The DRC's energy sector has over the years suffered poor management and accountability, corruption, ineffectiveness, misappropriation of funds, and huge gaps between energy policy and implementation. SNEL has particularly struggled with recovering electricity tariffs for the services rendered or lack thereof. Given this, implementing the Grand Inga project in the absence of strong institutional capacity would potentially be a recipe for disaster (Nguh, 2016).

The World Bank recognized the importance of good governance and sound institutions in creating a foundation for large energy infrastructure development and intervened by providing

technical assistance to help build capacity. While preparations for the ADPI were underway three interim institutions were set up with separate mandates. The Inter-ministerial Commission for Inga Development or Commission pour le Développment du Site d'Inga (CODESI). The Prime Minister, Matata Ponyo Mapon, chaired the Commission with a mandate to oversee the implementation of the technical assistance project (World Bank, 2014). An Inter-ministerial Technical Committee or Comité de Facilitation d'Inga (CFI) was established to manage the technical component for CODESI. And, the technical unit of the Ministry of Energy and Hydraulic Resources (MEHR) called Inga III Project Management Unit or Cellule Technique Inga 3 (CGI3) was tasked with implementing the technical assistance project (World Bank, 2014) (Congo Research Group and Resource Matters, 2019).

In addition, the ADEPI was conceptualized and later, established in October 2015. This agency was meant to be an autonomous and ring-fenced development authority tasked with managing and monitoring the dam development process and help mobilize other sources of finance for project implementation (Fabricius 2016). It was setup to create some functionality within a challenging governance environment and wider political economy dynamics in the DRC (World Bank 2018, 11). The Bank's justification for the institutional framework is premised on conclusions drawn from experiences which show that effective water and power management organisations are strongly protected by laws and regulations stating their responsibilities, rights, accountabilities and domains of influence (World Bank 2018, 11-12). It is possible that this institution would have a trickle-down effect in terms of ensuring that bidding processes, licensing, distribution, recovering and use of tariffs would be done transparently and with high levels of accountability. As per the original agreement, the agency would be placed under the auspice of the prime minister and a joint commission (World Bank, 2014).

In addition to ring-fenced organisations, contracts are binding agreements between cooperating parties. They set out the terms and conditions of the cooperative initiative and implications for defecting. Traditionally, this credible commitment instrument served in most cases, as the only document that bound partners to a project or agreement. The stipulations in contracts are case or project dependent. For instance, the more complex and unstable the internal dynamics of the host country is, the more likely the terms and conditions would be stricter to ensure that the

alternative to adherence is the least optimal choice for the host government. A respondent reckoned that in the case of the Grand Inga projects, there is likely to be close to or more than twenty contracts to limit the DRC government's ability to renege (European Investment Bank, 2018).

An example of such contract is the power purchase agreement signed between the governments of South Africa and the DRC. It serves as an institutional framework to guide the behaviour of both parties. In the agreement, South Africa was granted Rights of first Refusal Off-Take (RoFR) – it guarantees South Africa a minimum of twenty per cent of generated power equal to 9540 MW and a maximum of 13,060 MW (Department of Energy 2014, 12). The conditions necessary to secure the ROFR Off-Take includes: South Africa committing to buying 2500 MW from phase I of the project, pay US$ 10 million into an escrow account as commitment fee where, the governance protocol of the escrow account will be developed in terms of the Treaty under a separate protocol, RSA will be charged the lowest possible tariff and no other off-taker can receive better terms than RSA, RoFR will take precedence over any other possible third party agreement or arrangement to be entered into by the DRC and in future, additional volumes of energy may be negotiated (Department of Energy SA 2014, 13). These terms are likely to be adjusted given the new change in the Grand Inga plan. The government of the DRC signed a Financing Agreement with the World Bank which stipulated terms and conditions for the disbursement of funds for technical assistance. According to the contract, funds would be disbursed as each phase of the TA project is completed (World Bank, 2014).

Another form of institution used to establish credible commitment is minimum exposure (European Investment Bank, 2018). It is a credible commitment strategy employed by actors or partners to protect them against defection by the host government. This strategy involves minimizing participation and investment in such a large-scale project, especially where the governance and legal frameworks of the host country are substandard. By limiting exposure in the project, these private investors take a risk on their investments – usually, it is not a significant portion that can be counted as a loss should the need arise (European Investment Bank, 2018).

These mechanisms can curb credible commitment challenges however, their efficiency is highly dependent on the actors. This is the challenge with a supra-national institutional framework without a stable domestic regulatory governance to cushion the breakdown in supra-institutional arrangements. Again, regulatory governance refers to the mechanisms that societies utilized to curb regulatory discretion and to resolve conflicts that emerge because of these constraints. These mechanisms serve to hold the host government accountable on a national level, for its behaviour in an international cooperation arrangement. In the absence of those mechanisms serving to check-and-balance the behaviour of actors, particularly host governments on a supra-national level, compliance and credible commitment is left solely to the discretion of the actor involved. Hence, the existence and strength of domestic institutions play a pivotal role in facilitating credible commitment (Spiller & Tommasi, 2005) (Levy & Spiller, 1994).

But institutions are imperfect and to a large extent, they represent the bias of their architects (North, 1993). While the institutions represent an attempt to implant principles of order, accountability, and transparency in the development of the Grand Inga hopefully with a spill-over effect into other sectors, they were quick fixes and reflective of the World Bank's neoliberal agenda. The principles of democracy, multiparty-elections, economic freedom, and free-market competition are all traits of neoliberalism. These principles overlook the uniqueness of the African context such as diversity in tribes, cultures and traditions, traditional beliefs on rulership and historical grievances associated with ancestral land for instance. Also, the effect of colonialism and modern-day neo-colonialism is still visible in the African society. For example, the commodification of lives in the pursuit of political power and control is not peculiar to Africa rather, it is modelled after colonial rule. Colonial administrations used similar strategies to conquer and maintain control over their colonies.

Also, the preference for elitism where one's ability to simulate and adopt Western education and culture symbolises civilisation. In a global playing field where civilisation is synonymous with development, this narrative is biased against the African context. More so, the global structural divide and 'othering' further reinforces the undermining of the African context (Keet, 2014) (Hudson & Melber, 2014). For example, most African states (the periphery) were historically modified to become producers of primary commodities and consumers of

manufactured goods and services from their industrialised counterparts (the core). This remains the reality in modern Africa. Terms like "us" versus "them", "developed North" versus "developing South", "first world" vs "Third world" all play into the neoliberal agenda where countries who fail to meet the prescribed indicators are 'othered' (Biswas, 2016). The argument here is that a failure to understand and accommodate the uniqueness of a country's historical, political, social, and economic context leads to a 'one-size-fits-all' regulatory mechanism. In reality, one size does not fit all indeed.

As a counterargument, most African political leaders thrive on this narrative as an excuse for corrupt practices and kleptocracy. This is largely demonstrated by their preference for a non-Western source of funding. The focus of such financiers tends to be on the profitability of the project excluding issues of institutional capacity for instance. Thus, the supposed weakness of Western financiers is capitalised on by non-Western sources funders. Most times, the agency to protest the government's lack of accountability by members of the society is met with (threats of) violence and sometimes, loss of life. And in such case, the international community as representatives of liberal democratic principles is looked to for intervention or assistance.

Thus, in the Grand Inga case, institutions were useful to an extent in establishing credible commitment. The establishment of the CFI, CGI3 and CODESI were useful in signalling the intentions of the DRC were geared towards credibly committing to the terms of the agreement. However, Kabila's pursuit of self-interest undermined such efforts. It can be argued that following the incorporation of the ADPI-DRC into the Presidency, commitment to dam development was still underway until Kabila relinquished power in 2018.

5.7 Assessing changes to the Grand Inga narrative

China has become an important financier of development projects on the African continent. The Grand Inga scheme is no exception. Following the November 2006 Sino-Africa summit held in Beijing, China committed to investing US$5 billion in African infrastructure and launched the China-Africa Development Fund in early 2007 as the mechanism to implement its promised funding (Hathaway & Pottinger, 2008, p. 165). Its funding style has landed it the term "rogue donor" from Western critics (Taylor, 2017). China has in the last decade funded

controversial development or infrastructure projects in Africa. Chinese loans to Africa are seemingly non-concessional, that is, they are tied to more market-based interest rates than loans from Western counterparts (Wharton, 2016). In its quest to secure resources, Albert (2017) argues that China engages in a form of "commercial diplomacy" characterised by "numerous trades, assistance, and investment deals on frequent trips to resource-rich countries." This form of diplomacy is further made credible by its ability to provide low-cost financing and cheap labour for infrastructure projects in these countries (Albert 2017). Research shows that Chinese aid are largely motivated by the need level of the recipient country and the broader foreign policy aims of China (Taylor, 2017).

China through its state-owned Three Gorges Company has been involved in the race to develop the Grand Inga scheme. In 2017, the director of the ADPI signed an accord with the remaining consortiums in the bid – the Chinese Three Gorges and the Spanish *Actividades de Construcción y Servicios* (ACS) and AEE Power Holdings. These consortiums were required to work together and submit a joint proposal on the development of the Grand Inga scheme. It is important to note the context within which such request was made. Elections were postponed from December 2016 following Kabila's refusal to relinquish power. Following Joseph Kabila's denouncement of the third term in office, the hope was that a close ally of the former president, Emmanuel Ramazani Shadary, would emerge victoriously and hasten the development of the Grand Inga project (Africa Confidential, 2019). Instead, Felix Tshisekedi was installed as the new president as opposed to the true winner of the election, Martin Fayulu. This narrative of the installation of officials in strategic positions reflects the political situation in the DRC.

While these events were ongoing, leading up to the inauguration of the President Tshisekedi, negotiations on the Grand Inga were on hold. Before Kabila relinquished power, the plan to expand the dam into an 11,000 MW dam was proposed; however, it remained a bone of contention. Feasibility studies for a 4800 MW dam had been executed through AfDB financing. Developing the Grand Inga with this capacity would hasten the time frame needed to construct the project and more importantly, it would prove cost-effective. While the new President backed by the head of the AfDB (Akinwumi Adesina) agreed to this proposal, the Chinese consortium had argued against the 11,000 MW capacity dam (M'Bida & Maussion, 2020). As

of the time of writing in April 2020, a decisive plan on what the Grand Inga capacity remains inconclusive. And the ACS which was a major developer in the running for the Grand Inga project withdrew from the Grand Inga project. Before this strategic move, there were rumours of in-fighting between the merged consortiums on the mode of operation. The highly politicised nature of the project and the potential effect on the environment is said to have contributed to the ACS's decision to leave the project (M'Bida & Maussion, 2020).

5.8 Concluding remarks

In the assessment of this case study, I sought to explain underinvestment in large dam development in Africa using credible commitment as an analytical framework. To this effect, the chapter began with a historical narrative of the Inga dam as the first phase of the Grand Inga scheme, and the third dam on the Inga Falls (after Inga I and II). In no chronological order, the narrative discussed highlighted efforts to harness the potential of the Congo River in 1928 and the 1970s-80s following the development of Inga I and II under Mobutu Sese Seko's regime. But the mid-1990s symbolised a resuscitation in the potential of the water-for-energy resource to meet domestic and continent-wide electricity needs.

Following this, a political economy of the Grand Inga project was provided. The section began with a brief description of the project and a breakdown of the bone of contention – the technical assistance component of the Grand Inga. This analysis emphasised the key actors and their financial contribution while going on to discuss their vested interests in the development of the Grand Inga project. In this study and more specifically this chapter, the political economy of the Grand Inga was examined through the lens of credible commitment. It was established that commitment became credible when actors signalled willingness to participate in a given initiative, persuade others of their commitment by taking actions that tend towards the collective goal, and persistently choosing options that promote the collective good as opposed to the pursuit of self-interest. In applying this logic to the Grand Inga case, the study finds that the initial signing of the financing agreement with the World Bank was an indication of the first two strategies (willingness and persuasive communication). However, the government of the DRC defected in choosing strategies that furthered compliance with the terms of the agreement.

In explaining why credible commitment problems emerged, the above analysis shows that uncertainty and the number of actors involved in the development of the Grand Inga created an enabling environment for credibility problems to emerge. Such problems are characterised by the inability of the host government to follow through on its promise or pledge. Also, these problems had taken the form of time-inconsistency where it was no longer rational for Kabila to follow through on his commitment in the year 2015. Similarly, it was no longer in the interest of the World Bank to fund a project in a country whose government would blatantly defect in terms of the agreement. The lack of a supranational authority further complicated credibility problems. For instance, in the presence of a third party or credible enforcer, Kabila would have been held accountable for his actions. The lack thereof emphasises how actors are tacitly entrusted with self-enforcing the terms of an agreement. Finally, I argued that Kabila's commitment can be cynical given the short time frame with which an alternative source of funding was accessible.

A discussion on the mechanisms employed to prevent and address credibility problems was undertaken drawing on the credible commitment literature. The findings show the importance of compatibility in interest within and between actors. This compatibility should not be limited to an agreement over the collective goal to be achieved; rather, it should be inclusive of steps or actions to take in an attempt to accomplish the set goal(s). When a collective goal aligns with the self-interest of an actor, he is more likely to credibly commit to the project and vice-versa. Also, compatibility among actors leads to some level of co-dependency. This enables a check-and-balance of commitment with a high likelihood of incentivising commitment. In the Grand Inga case, Kabila's interest on how to execute the technical studies and subsequently dam development differed from those of the World Bank and the AfDB. As a result, the positive effect of repeated interaction that leads to credible reputation was undermined because of a clash of interests. Also, the effectiveness of institutional frameworks established to ensure the transparent running of the Grand Inga project were undermined by Kabila's pursuit of self-interest.

The chapter ended by examining the status quo of the project as of April 2020. It explained that a conclusive decision regarding the capacity of the Grand Inga had not been reached and one of the major developers, the ACS, had withdrawn from the project. Drawing on the case studies,

the next chapter discusses the factors that motivated or hindered credible commitment. This analysis provides a well-rounded explanation for the differences in outcomes between the Grand Inga and the Cahora Bassa dam.

CHAPTER SIX: DISCUSSION

The preceding case study chapters have provided insight into the narrative of the Cahora Bassa dam and the Grand Inga project; the latter of which is part of a bigger scheme called the Grand Inga dam. The chapters outline and discuss the credibility challenges that emerged at different phases of the construction and development of the respective projects, with the Grand Inga still being negotiated and discussed as of 2019. Also, the chapters discussed the nature of the credible commitment challenges peculiar to each case study. As was discussed, both the Cahora Bassa and the Grand Inga dam case studies were characterised by a time inconsistency credibility challenge further complicated by the lack of a supranational authority to monitor compliance and punish defection. Also, I showed that in the Grand Inga case, there was a possible cynical commitment challenge. Following this, I discussed the mechanisms employed to address the credible commitment problems and why these were successful in the Cahora Bassa case but not the Grand Inga project. Again, this study operationalizes "success" as the ability to overcome credible commitment problems to secure investments for large dam development as well as the construction and operation of the dam. Given this logic, the Cahora Bassa dam is deemed the success case as opposed to the Grand Inga project.

To assess why some large dams, get built and others do not, it is important to comparatively assess the case studies vis-à-vis the research questions. This chapter answers the pending research question on what factors facilitated or hindered credible commitment in the Cahora Bassa dam and the Grand Inga project, respectively. It reiterates the discussion on the nature of the credibility problem and how they were addressed. The findings of this discussion have both academic and policy implications as they can inform investors and host government alike not only about the importance of credible commitment in sunk asset cooperation but also about the mechanisms that are likely to address such challenges. In academia, it makes for a rethink of broad stroke assumption on the factors that facilitate successful cooperative outcome in a sunk asset industry. The chapter ends by providing a synopsis of the core arguments examined.

6.1 Characterising both dams – similarities and differences

The Cahora Bassa and Grand Inga dam projects share certain characteristics but also have defining traits. Both dams are colossal. The Cahora Bassa dam has an installed capacity of 2075 MW while the Grand Inga was originally designed to produce 4800 MW of electricity

output. The new design proposal for the Grand Inga would see the dam produce 11,000 MW of electricity output. Both projects are trans-boundary in scope in that they are characterised by investment partnerships involving one or more international actors. In the case of the Cahora Bassa, the Portuguese colonial government partnered with the apartheid government in South Africa for the development and operation of the dam. Similarly, the Grand Inga project was initially a partnership between the Kabila government, the World Bank and the African Development Bank, with South Africa as a potential off-taker. As of 2016, following the World Bank's withdrawal from financing the technical assistance part of the project, the ADEPI is in partnership with China to finance the project.

The Cahora Bassa dam was designed and implemented in the colonial era whereas the Grand Inga project is a post-colonial project. A defining feature of the colonial era was the presence of a strongman state. While criticism of the strongman state is agreeable in that it links to oppression and repression of certain groups based on ethnicity, tribe, religion, beliefs and/or race; this often extends to the use of force and in most cases, the killing and maiming of these groups. This study identifies its unique trait linked to credible commitment. This constitutes the ability of a government to have a development plan of action and follow through with it despite the odds. The end goal is the overall wellbeing of its 'peoples' (which is dependent on how it defines 'its peoples'). The Portuguese government, in this case, wanted to ensure that its regime was safeguarded from attempts at territorial expansion by the apartheid government and at the same time, ensuring that the Portuguese settlers in the colony had access to electricity. The post-colonial era is characterised by more inclusivity and paradoxical standards of morality. Development projects must meet certain international standards and, implementation is premised on the government's ability to align its domestic political economy to the requirements of international financial institutions.

6.2 Factors that facilitated or hindered credible commitment

Comparing the narrative of both case studies, several themes cut across the board. These themes or factors include regime uncertainty and security, regime type and institutions, external influence in domestic politics, trust, number of actors, market and market proximity, and the politics of hydro rents in terms of ownership and purpose of the dam. Each of these factors facilitated or hindered credible commitment in the respective case studies. It is important to

emphasise that for this study, I qualify apartheid South Africa, colonial Mozambique and the DRC under the leadership of Joseph Kabila as 'strongman' state and 'quasi-democracy'. The justification and preference for these terms compared to "settler" states and "fragile" states stem from two main reasons. Firstly, at that time it was uncertain whether Mozambique and South Africa would indeed be settler colonies. Negotiations for dam development coincided with the wave of the liberation struggle in Africa. This struggle subsequently led to the overthrow of the colonial regime in Mozambique but not South Africa. Thus, since my analysis is based on that referent point in history, it is more suitable to refer to them based on their governance strategy (strongman states or quasi-democratic). It is important to note that these regimes were democratic to the extent of the white minority and repressive towards their black majority.

Also, I refer to the DRC under former president Joseph Kabila's regime using the same terms. As a scholar, I find terms such as "failed" or "fragile" states problematic. I share Nuruzzaman's argument for cautious and reflective use of such terms in describing and explaining the plight of most third world countries (Nuruzzaman, 2009).[21] I argue that to an extent these terms place the responsibility of the so-called 'failure' on the policy, political and economic decisions of the government while exempting the heavy-handedness of powerful first-world states and institutions in shaping such 'failed' outcomes. It also creates a penchant for "othering", which falls outside the scope of my research. Thus, this study considers the DRC as quasi-democratic as opposed to a fragile or failed state.

6.2.1 Regime uncertainty and security

For this study, regime uncertainty and regime insecurity will be used interchangeably. I acknowledge that there is a difference in how the latter is conceptualised and used particularly along core security lines. However, within my case study particularly the Cahora Bassa case, the line between both terminologies was blurred. Regime insecurity is the converse of regime security defined as the condition where governing elites are safe from any violent [domestic] challenges to their leadership (Koblentz, 2013). This definition indicates that a secure regime is one that exercises autonomy or sovereignty in decision-making and is free from the fear of

[21] Also see Grimm, Sonja, Lemay-Hebert, Nicolas, and Nay, Olivier. 2014. "'Fragile States': Introducing a Political Concept.". *Third World Quarterly* 35 (2): 197-209.

a coup, whether domestically or internationally motivated, attempting to overthrow the incumbent government for any given reason. When this situation is not the case, then insecurity may be used to characterise such a regime. Regime uncertainty is defined as the "lack of predictability in the rules of the game" (Coyne and Boettke 2009, 16). That is, the inability of policymakers or the government to guarantee continuity in policy decisions that are conducive and protects investments.

Both national governments and investors are affected by regime uncertainty and security. A government may be concerned about the certainty and security of its regime vis-à-vis domestic occurrences. Similarly, an investor looking to plough capital into a development project in any country would be concerned about the certainty and the security of the regime with whom it wants to sign an agreement, and the ability of future events to change that. Hence actors both domestic and international cannot be confident in the stability of rules over time (Coyne & Boettke, 2009). In the African context, uncertainty is characterised by the sporadic change in political heads that, often, leads to a lack of continuity in policy decisions such as medium- to long-term development plans. In some instances, the incoming or the incumbent government attempts to change the constitution or laws to ensure a continued stay in office. This political behaviour has dire economic consequences for sub-Saharan African states within the global political economy. For one, it undermines the reputation of the government and negatively affects their ability to attract and sustain investments to fund development projects. Other factors like the volatility of international markets, commodity prices, historical ethnic and tribal tension and climate change all contribute to the precariousness of the future (Yusoff & Gabrys, 2011) (Ang, 2011). This affects an investor's willingness to invest in a political context characterised by uncertainty. Where large dam investment cooperation is concerned, political uncertainties and violence constitute the biggest risk factor to an investment in any country or region (Collier & Pattilo, Investment and Risk in Africa, 2000) (Brunetti & Weder, 1997). The situation becomes grave where investments have been made and uncertainty about the regime's continued occupation of office becomes glaring in time. Investors, as any rational actor would, tend to respond in a way that safeguards their investments irrespective of the consequences.

The relationship between regime security and the problem of credible commitment is bidirectional. The inability of policymakers to commit to the terms of an agreement contributes

to its regime uncertainty; this largely applies to countries with strong audience cost. Similarly, when there are uncertainty and insecurity about a regime, it indicates that the government will be unable to credibly commit to the terms of an (international) agreement. Such regimes pose political risks possibly dissuading the investors in the first place. There are two types of regime uncertainty, prevalent in the literature on credible commitment, consisting firstly of the inability of policymakers to define the scale and scope of intervention even though they send credible signals that "vast and arbitrary" interventions will occur in the future if and when necessary. Secondly, policymakers struggle to provide a clear stance on policy responses. This makes it difficult for investors because they must observe how events unfold before making investments (Evans, 2015, p. 767).

Besides, Higgs (1997) notes that uncertainty about a regime is characterised by the fact that government action [in future] could threaten investors' private property rights in their capital and the income it yields. This is because the security of investors' capital is not necessarily dependent on the "letter of the law" as much as it is on the character of the government that enforces it. If investors pre-empt opportunistic behaviour by the government, they are likely to opt-out of investing in the first place. If they choose to pursue the project, their natural response is to an attempt to establish institutions that often go as far as reforming domestic institutional frameworks to guarantee credible commitment by the host government and returns on investments in future. Although Higgs (1997) defines regime uncertainty in relation to business confidence and private property rights,[22] there is some element of applicability in the cases of the Cahora Bassa dam and the Grand Inga project.

Regime uncertainty features as an explanatory variable in both the Cahora Bassa dam and the Grand Inga project, but to varying degrees. Several factors threatened the Portuguese colonial administration's certainty both in Mozambique and in the Southern Africa region. For instance, there was a scramble for domination through territorial expansion between Portugal, Britain and South Africa, in the region. At that time, territory represented political and economic power; hence, the more territory a colonial administration had in a sub-region or the continent, the more power it was able to wield in the respective region and globally (Correia & Verhoef,

[22] For more critique of Robert Higgs work, see Evans, Anthony J. (2015), "The Financial Crisis in the United Kingdom: Uncertainty, Calculation, and Error" in Boettke, Peter J. and Coyne, Christopher J. (eds.), *The Oxford Handbook of Austrian Economics*, Oxford University Press.

2009). In Southern Africa, Portuguese territories – Angola and Mozambique – were bordered by the Union of South Africa and the British-ruled Rhodesia and Zambia, increasing the threat of expansion by South Africa and Britain. This left Portugal continually striving and competing with its counterparts to maintain territorial integrity over its colonies. Cognizant of a possible expansion by either South Africa or Britain, the Portuguese found it in its interest to be good neighbours with both South Africa and Britain. Portugal credibly committed to the cooperative relationship with its counterparts because the relationship would pay off at a later stage (for Portugal) following the rise of resistance movements in the region thereby consolidating its stay in the region, and the attempt to build the Cahora Bassa dam.

Other than a possible attempt by hostile neighbours to cease the Portuguese territory in Southern Africa, its regime's uncertainty was exacerbated by its rising external debt. As discussed in chapter four, Portugal's external spending, within its overseas territory, was increasing. Resources were ploughed into financing security measures such as the purchase of weaponry to curtail and prevent the nationalist movements attempting to oust the colonial government. As a result, most taxpayers in Portugal and policymakers were conflicted on the continued occupation of the overseas ministries because of the growing expenses. The unwillingness of Portuguese citizens to pay for development initiatives in the overseas territory implied that Portugal would have to borrow money to finance such projects further increasing their external debt (Middlemas, 1975). Hence, to successfully implement such projects, the Portuguese colonial administration would need a guaranteed off-taker to commit to buying the electricity output upon project completion.

External debt threatened the certainty of the Portuguese colonial government because it would imply relinquishing some ownership and control to a partner. Sourcing for external funding could have implications on her ability to have full control or majority shares in the hydropower project. Hence, in extending an invitation to potential partners and consortiums to embark on the project, the Portuguese government made it clear that they intended maintaining control at all stages of the dam construction and its final operation (Middlemas, 1975, p. 42). Portugal was only willing to give away a minority share in the project – an unattractive strategy to any business entity. For a sunk asset project, an enticing share of the hydropower dam would have otherwise persuaded the European banks and entrepreneurs in Portugal to fund the project.

And, without a guaranteed off taker to buy much of the electricity output, the project would simply be a white elephant project. Portugal was concerned about being bound to a powerful neighbour such as South Africa. However, the partnership to construct the dam was structured in a way that each participant was responsible for constructing infrastructure for the dam within its respective territory – preventing shared responsibility in terms of financing and project management (Middlemas, 1975).

Finally, the wave of liberation movement across the continent especially in the Southern Africa region threatened the Portuguese colonial government's regime security and certainty. FRELIMO's agenda was to overthrow the colonial government and restore territorial integrity to the indigenous people of Mozambique. The construction of the Cahora Bassa dam would, as a result, extend beyond energy security issues in the hope that the project would limit guerrilla advances to the south of the Zambesi River, and would relatively hinder easy access by FRELIMO forces to the heart of Mozambique from their respective bases in Zambia and Malawi. This would serve to secure the Portuguese regime in Mozambique. Also, as the movement grew, dam construction and subsequently the supply of electricity to South Africa was interrupted forcing the latter to question the security of its energy interest in Mozambique and the certainty of Portugal's regime and ability to maintain orderliness in its colonies. The unpredictability in Portugal's response, partly because of financial fatigue, caused South Africa to offer military and arsenal assistance to Portugal. To the Portuguese administration, the dam project would also motivate and increase the white settler community in the country, especially many former soldiers, to provide first-line defence against exiled African guerrillas (Isaacman, 2001, p. 206). Increasing the population of white settlers in Mozambique would drive regime certainty. However, there was little prospect of investment from metropolitan investors and little evidence of a settler interest in the malaria-infested region caused the Portuguese to rethink its goals and the economic viability of the dam (Isaacman, 2001). Hence, the Cahora Bassa dam project became a means to ensure the Portuguese regime certainty and security in Mozambique.

In the case of the Grand Inga project, regime uncertainty and security arguably caused the Kabila government to defect on the agreement with the World Bank. The initial agreement in setting up the ADEPI was that the institution would exist and be operational outside the office

of the president but under the auspice of the office of the Prime Minister (World Bank 2014). This clause, as elections drew closer in 2016, arguably threatened Kabila's political aspirations in a country where political office is highly and most times, violently contested. The backing of a Western institution had the potential to undermine Kabila's political aspirations as discussed in the case study chapter. Hence, defection became a rational strategy for Kabila and his government.

As discussed above, regime uncertainty and security facilitated credible commitment in the Cahora Bassa case but was a hindrance in the Grand Inga case study. In the former, the uncertainty about the fate of the Portuguese colonial government in Mozambique, coupled with the uncertainty about the intentions of *hostile* South African and British neighbours seeking to expand their influence through territorial acquisition in the Southern African region, and the threat the regime faced from FRELIMO, all motivated the regime to partner with South Africa that was experiencing a similar domestic challenge but was better equipped to violently handle the situation as opposed to Portugal. By committing to supply 80% of the dam's output to South Africa, the Portuguese colonial government aligned its regime security and certainty to the apartheid government's interest. This was not the case for Grand Inga. In this, the dissociation of a crucial component of the country's wellbeing from the office of the presidency threatened Kabila's interest and therefore, reneging became a rational and optimal choice for him.

6.2.2 Regime type and institutions

Several studies have examined the correlation between regime type, credible commitment, and different forms of international cooperation (Leeds 1999, Weeks 2008, Gaubatz 1996, Fang and Owen 2008, Simmons 2000). Scholars like (Rånge & Sandberg, 2017) have classified various regimes and explained their constituencies however this study further simplifies and dichotomizes the categories into democracies and non-democracies. The ability of a regime to signal commitment is often associated with the strength of its domestic institutions and audience cost – the ability of the populace to hold its government accountable for decisions and/or (in) actions taken on its behalf. There tends to be a consensus in the literature that democracies are better positioned to better signal credible commitment than their non-democratic counterparts mainly as a result of these two factors – the presence of strong domestic institutions and the citizens together with the media playing the role of a watchdog

on its government's behaviour. Since domestic political structures are integral to regimes, these scholars argue that varying types of regimes influence the ability of states to make credible commitments and their willingness to enter into international agreements (Leeds 1999, p. 986).

The basis of this claim that differentiates democracies from non-democracies in their ability to effectively signal credible commitment is the notion of accountability. Premised on the liberal democratic principle that governments should be accountable to its people, there is indeed an underlying assumption that democracies are better advantaged in international cooperation (Leeds 1999, Fearon 1994 and Gaubatz 1996). Leeds (1999, p. 986) reiterates this position by stating that most of the argument in the literature that associate regime type and credible commitment emphasize the degree to which state leaders are held accountable by a domestic population for their actions. In states with higher degrees and broader ranges of political accountability, state leaders are more likely to face domestic political costs for breaking international commitments. On the other hand, non-democratic regimes tend to enjoy more autonomy and less domestic constraints in comparison to their democratic counterparts. Decision-making and policy actions are left to the discretion of a few political elites who may or may not have the interest of the citizenry at the fore. In this regime, audience cost becomes a redundant explanatory variable.

The Cahora Bassa dam was a successful *development* project pioneered by two quasi-democratic regimes – the apartheid government in South Africa and the Portuguese colonial government in Mozambique. Quasi-democracy (classified as non-democracy) is "a situation where democracy is conditioned by the existence of an instrument of rule and by a monopoly of power through which democratically made decisions can be channelled" (Kjaer, 2010, p. 149). Both governments were democratic to the extent that policy decisions that were geared towards the development of the white minority and further repression of the indigenous groups were deliberated and discussed in parliament – comprising of the minority. In PCG's case, decisions about overseas ministries were discussed in the mother country, Portugal, and representatives in the overseas territories would implement. Although they had the autonomy to run the colonies independently, decisions about the colonies were still tabled before the Salazar government (World Council of Churches, 1971). The Cahora Bassa scheme was a product of a colonial regime characterised by oppression and marginalisation. The regime saw

white Portuguese settlers embarking on development projects to the benefit of *white* Mozambique. As settlers, the goal was to use these projects as leverage for continued stay in the colonies and at least indicate to the international community (which was beginning to have anti-colonial sentiments) that development was occurring to the benefit of *all* despite the type of regime in place. Although there were some elements of democratic principles, the regimes were autocratic towards most of the population.

In the Cahora Bassa case, regime type and institutions facilitated credible commitment particularly in the sourcing of funds to finance the project. Here we have two strongmen states defining the terms on which they would cooperate – evident in the terms of the agreement. The PCG knew that to achieve its broader objective in the region, it would require the security and support of the apartheid government. The PCG was willing to compromise on its energy resources – as it ultimately benefitted South Africa as opposed to the white settlers in Mozambique – for its greater good (regime security and certainty). Also, irrespective of the sentiments amongst Portuguese entrepreneurs and investors about the economic viability of the Cahora Bassa project, the PCG in Mozambique saw the dam as an extension of their interest in the Southern African region, which was thought to benefit mostly the white settlers in the broader scheme of events and earn a *friendlier* and supportive South African neighbour. In this context, one can argue that a strongman state is implementation-driven whereas its democratic counterpart is deliberation-driven. Both parties knew what had to be done and committed to it despite attempts by nationalist movements to disrupt the construction and operation of the dam. Where threats to their interests occurred, force was employed to minimise or eliminate the threats.

This argument is echoed in the narrative surrounding the construction of the Grand Inga sister dams – Inga I and II. The latter were projects pioneered by Mobutu's non-democratic regime in the DRC. The projects aimed to provide access to affordable electricity to the Congolese people and to the mines in Katanga. Mobutu had a grand agenda to address electricity issues in the DRC. Although poorly conceived, Mobutu had an industrialization plan for the DRC. As Bayart (2009, p. 245) argues, Mobutu was as interested in electric power as he was in political authority. The Inga I and II were constructed through the help of his Western allies to have more access and create more industries in the DRC. Following assassination attempts on his

life, Mobutu's regime became more dictatorial characterised by oppression and plunged the country into debt while embarking on white elephant development projects. For one, the *Zairianization* of the economy saw the key sectors being nationalised – this proved detrimental to the economic wellbeing of the country.

The institution or rule of the game grounding the Cahora Bassa project was binding contracts. The initial contract outlining the terms of the agreement to finance and supply electricity from the Cahora Bassa dam is the Electricity Supply contract between both governments. The contract stipulates the jurisdiction and limitations for each government. For instance, the supply contract clearly stated that each party should assume responsibility for decisions relating to the equipment, operation and maintenance of asset within its territory (Ministério Do Ultramar, 1969). As complexities emerged such as the rise of nationalist movements in the country threatening the interest of the strongman states, they responded through the use of force in an attempt to curtail efforts to destabilize and overthrow the colonial government. Conversely, in most democratic settings, the use of force is the last resort after other avenues such as diplomacy and even sanctions have been employed.

Also, as events evolved, seeing the installation of a new government in independent Mozambique, the relations between the apartheid government in South Africa and the FRELIMO government were strained. The latter found the terms of the supply contract to be unfair towards the indigenous people of Mozambique and sought to renegotiate those terms to at least a market competitive price level. The apartheid government was reluctant to and only offered to increase electricity tariff payment to 5 cents of a Rand per kWh of firm power (Begg, 1984, p. 3) (van Huyssteen, 1997). The increase in price was as a result of higher construction costs than those originally predicted. Following this agreement, South Africa enjoyed uninterrupted supply of electricity until the contract was suspended in December 1980. By 1984, following the signing of the Accord of Nkomati, a new agreement and supply contract was negotiated between South Africa, Portugal and Mozambique (Begg, Southern Africa Record, 1984). An interesting point to note in this case study is that despite the regime type, each participant indulged in the use of contracts and, to a large extent, respected its terms until it did not serve its respective interest. At such point, there was an attempt to change the terms to suit an interest.

In the Grand Inga case, regime type and institutions aimed to facilitate credible commitment but failed. The DRC under the leadership of Joseph Kabila was a strongman state. His regime was authoritarian, where the use of force to disperse protesters and other scare tactics were incessant. The iron-hand governance style with an increasingly politically savvy population undermined his ability to credibly commit to the terms of the agreement. The audience cost in the DRC has steadily increased with most being accounted for by the diaspora.

On the other hand, I argue that Kabila's attempt to replicate a strongman state in a post-colonial era characterised by globalisation – particularly the intense spread of political, social, cultural and economic ideologies – was fundamental to the failure of his 'strongman' state to signal credible commitment. Today's world is saturated by democratic ideals and principles of governance where democracy is viewed as the hypodermic needle or magic bullet to achieving economic and human development. The concept has been highly romanticised particularly in the African context and is evident in occurrences like the Arab Spring and the assassination of Libya's former president, Muammar al-Gaddafi. Democracy has come to be used interchangeably with *good governance* and represents the means to the *freedom* most Africans have longed for. What constitutes freedom remains a bone of contention; however, the basic freedom of human existence and decision-making are prioritised. Hence, any governance model outside democracy is frowned upon in some parts of post-colonial Africa and the international community at large. It can be argued that the fact that Kabila's regime was non-conforming to the principles of democracy and good governance undermined the credibility of the regime to effectively signal credible commitment to the stakeholders who are proponents of liberal democratic principles.

Since Kabila's regime was questionable, part of the technical assistance funded by the World Bank and the African Development Bank was to create an institutional environment that would facilitate and ensure credible commitment throughout the lifespan of the Grand Inga project and beyond.[23] The ADEPI was set up and placed outside the office of the Presidency to ensure

[23] It is important to note that the ring-fenced institution was not only set up to manage the affairs of the project in relation to the technical assistance project funded by the World Bank. It was meant to remain in existence post-construction, to enable the efficient and accountable recollection of electricity tariffs.

autonomy in processes, transparency and accountability (Fabricius, 2016). The institution would be created as an independent entity; it would report to the office of the Prime Minister with a Board of Directors that represents various Inga development stakeholders (World Bank, 2014). Although this was meant to aid project implementation, it inadvertently contributed to the failure of the project to launch. The move to situate the ADEPI outside the office of the presidency, I argue, threatened Kabila's interests considering such a political terrain. As a result, it was strategically rational for him to renege on the agreement. Hence, the presence of institutions failed to facilitate credible commitment in the Grand Inga case.

6.2.3 Context and Interest

Having discussed the preceding points, two key factors emerge from the discussion. These are the importance of context and interest in resulting in a preferred outcome. From both case studies, it can be argued that context played a role in the ability of the participants in each case study to enforce the agreement and therefore credibly commit to it. The colonial era as earlier stated was characterised by a non-democratic takeover of colonies or territories in the African continent. Decision-making was favourable to a selected few and since this was the norm, it was almost easier to get development projects pioneered by two or more actors from and in the same context, sharing similar ideals, completed successfully. In a post-independence era characterised by neoliberal principles of democracy and individual freedom, contravening ideals are frown upon both within the local and international community irrespective of the end goal (development). It is important to emphasise that this study does not advocate that repressive governments whose goal is to commodify the lives of people to maintain political office is a requisite for successful large dam investment cooperation. Instead, the study reports the patterns identified in the case studies considering both the apartheid regime and colonial Mozambique had elements of strongman state.

Secondly, the interest of the respective host government features as an explanatory variable in understanding why one case was successful and the other not. When a project aligned with an actor's interest, there tended to be a successful outcome. And the reverse was the case where the outcome failed. The PCG's interest in Mozambique, characterised by regime security and certainty, was aligned with the construction and operation of the Cahora Bassa dam. Also, aware that its financial and military resources were depleting as a result of fighting off

nationalist movements across its colonies in the African continent, the PCG ensured that it tied the apartheid government's interest with its own, using the Cahora Bassa dam. As earlier discussions show, the partnership between both governments extended beyond energy security issues.

Following Mozambique's independence in 1975, it was in the interest of the new government to cease its destabilisation attack to overthrow the colonial regime. South Africa's involvement in the creation and funding of the RENAMO as a contingent strategy to destabilise the FRELIMO government can be argued was an attempt to protect its energy security interest. As stated in the preceding chapter, the (energy) security interest of both regimes had been interwoven at that time that a threat to Portugal's hegemony in Mozambique meant a threat to the apartheid government. However, as RENAMO became rogue by destroying pylons carrying electricity to the Apollo station in South Africa, the latter had to rethink its stance on the newly independent government of Mozambique. The strategically rational option for South Africa was to ally with FRELIMO to curb RENAMO, and in partnership with the Portuguese through the HCB, initiate plans to repair damaged electricity infrastructure (Isaacman A. , 2001) (Thomashausen, 1983). Another instance of time inconsistency problem is reflected in the 1990s to 2000s pertaining electricity tariffs. Although a tripartite agreement was signed between HCB (Portuguese colonial government), the Republic of Mozambique and South Africa in 1984, Mozambique reneged on the terms of the contract in an attempt to renegotiate electricity tariff. With South Africa's refusal to come to the negotiating table, Mozambique responded by cutting electricity supply to its neighbour.

In the Grand Inga case, a similar argument can be made. I argue that Joseph Kabila viewed the ADEPI as a threat to his political seat including insinuations that the terms of the World Bank agreement undermined the sovereignty of the DRC by Bruno Kapandji. Thus, his strategically rational response to such threat was to renege on his commitment to the World Bank. These examples show the importance of context and interest in the ability to signal credible commitment. As discussed in Chapter 3 while iteration (repeated interaction between actors in a social setting) and the presence of institutions are important in facilitating credible commitment, the interest of the actor is more crucial. Once a commitment is in the interest of

an actor, they tend to go over and beyond to ensure that they remain committed till the lifespan of the cooperative initiative lapses.

6.2.4 External interference in domestic politics

External influence in domestic politics is a central thesis in the resource curse debate. The political and economic resource curse debates emphasise that countries with an abundance of natural resources are less likely to achieve democracy and economic development (Collier, 2007; Ross, 1999; Alence, 2005; Orievulu, 2012). Another fundamental problem in such countries is the role of external actors in shaping the political economy of the state and exacerbating the curse. External social forces that include institutions like the World Bank, the International Monetary Fund (IMF) and the World Trade Organisation (WTO) that control global trading and financial governance, as well as states and multinational corporations with vested interests in those countries.

Many African countries have been victims of the negative implications of the resource curse of which the DRC is an example. Poor institutional building and ineffective domestic institutions, the inability to hold governments accountable for poor management of resources, lack of accountability and transparency in the legislative processes of resource agreements/deals signed by the government, are features of a country with the resource curse. These factors coupled with the varying vested interests of external actors impede democracy and creates a breeding ground for the emergence of autocratic regimes. It also becomes difficult for the country to embark on productive long-term development projects and affect their ability to signal and make credible commitment in international cooperation.

External interference in domestic politics often, attempt to shape or condition the government's behaviour to act way. It serves as an explanatory variable in the assessment of the Grand Inga case study. External actors have largely shaped the DRC's domestic politics and economics. Present in the DRC are allies such as the United States, France, Belgium, and China as well as multinational corporations representing the interests of these countries and multilateral institutions seeking to promote neo-liberal principles at any and every given opportunity. Mobutu's Western allies financed Inga I and II to gain more access to the extractive industry. The World Bank has through various cycles of loans and grants, attempted to promote

institutional reforms to democratize and make the DRC more compliant with its principles. This phenomenon escalated in the post-Mobutu era. While in the Mobutu era, the interference was largely characterised by state alliances (Eastern block to western block), the post-Mobutu era has a multiplicity of actors interfering in the domestic political structure (Freedom House, 2007). From traditional allies such as the United States, France and Belgium to new players in the field such as India, China and South Africa, with multilateral institutions remaining constant, external actors have persisted. This scenario is further heightened by the vested interest of a growing politically savvy population who by their actions have also shaped the internal political dynamics of the country.

In the Grand Inga case, external interference in domestic politics hindered credible commitment. History shows that the political environment, more specifically the presidential and strategic office candidates in the DRC, are largely shaped by superpower interests in the country. The constant scramble for the country's resources by countries like the United States, Belgium, France, India and China largely determines which candidate occupies political office (Africa Confidential, 2019). Hence, the World Bank's interference in domestic politics by removing a strategic sector of the economy – energy – from the office of the presidency, to achieve transparency, accountability, and effective project implementation was a probable threat to Kabila's political seat. One can argue that the move by the World Bank was largely in the interest of project implementation, to safeguard the ADEPI from being used as a political tool for opportunistic behaviour. However, energy as a strategic sector of the economy is equally as political as it is economic in the DRC. This, I argue, contributed to the decision to renege on the Financing Agreement by Kabila and his government.

In the Cahora Bassa case, South Africa's interference along security lines was consensual. One can argue that the guarantee of an external interference in domestic politics by the apartheid government in then colonial Mozambique, further encouraged the PCG to credibly commit to constructing and operating the Cahora Bassa dam. As previously discussed, the PCG was cognizant of the fact that South Africa was a powerful neighbour with economic and military capacity to address issues such as liberation movement. As the wave of decolonisation swept across the African continent, and more specifically Portuguese territories in the region, it was strategically rational for the PCG to further synthesise the apartheid government's interests

with theirs. The PCG wanted to develop the Cahora Bassa dam and maintain territorial integrity in the colony of Mozambique. As the movement grew in size and attack power, the PCG's resources to manage the situation grew thinner. The Portuguese government had approached South Africa for resources and assistance in curbing the growing national movement who sought to sabotage the dam initiative and destabilise the colonial government (Isaacman A. , 2001).

Logically, South Africa to whom most of the electricity output is sold had a vested interest in protecting the dam and the transmission lines carrying power to its Apollo Station. More so, South Africa was at that time, dealing with the same challenge from the ANC. And, both movements easily crossed over into the respective territories to share information and regroup. It was in both countries' interest to partner and *fight* a common enemy. Hence, South Africa's interference in Mozambique was justified – interest in electricity and the protection of its borders. This interference further extended to the creation of what might be termed a *rogue* organization – RENAMO – after the collapse of the PCG and the installation of FRELIMO as the new government. A tit-for-tat strategy that would see RENAMO attempt to mimic FRELIMO's ousting of the Portuguese colonial government in Mozambique. Again, the goal was to protect their electricity interest and ensure that Mozambique (under the PCG) still adhered to the original terms of the agreement. Uncertainty about the new Mozambican government and the electricity supply agreement served as an incentive to interfere in Mozambique's domestic affairs.

6.2.5 Trust

Game theory emphasises the importance of trust in the interaction between actors to ensure cooperation. Since it is fairly a liberal theory, the attempt is to establish a win-win situation where cooperation is central even though it is not always attainable. The study so far found elements of trust and mistrust in the cases but with more mistrust in the Grand Inga case than the Cahora Bassa case study. Trust in this case does not necessarily imply a firm belief in the reliability of the actors to follow through on an agreement. Rather, it implies that having established that it is optimal for all actors to commit to an agreement because of the costs of defection, each actor hopes that the strategic interaction and rational behaviour of cooperating

partners tend towards cooperation rather than defection for a successful outcome (Bromiley & Cummings, 1995).

Across the case studies, my findings show that where elements of mistrust between the actors emerged, a tit-for-tat strategy was employed to punish defection. A tit-for-tat contingency is a variant of the "eye for an eye" rule of behaviour: do unto others as they have done onto you." (Dixit and Nalebuff 1991, p. 106). The strategy encourages cooperation in the first period and goes on to mimic the rival's action from the previous period. The challenge with this strategy is that any mistake "echoes" back and forth. Once one side punishes the other for a defection, it often sets off a chain reaction because the rival most times responds to the punishment, leading to another round of punishment being implemented in response to the rival's retaliation (Dixit and Nalebuff 1991, p.108).

The Grand Inga case study embodies this strategy. The World Bank had threatened to withdraw its technical assistance funds and followed through on the threat in 2016 (World Bank, 2016) (The World Bank, 2018, p. 19). The logic behind the Bank's withdrawal was the unilateral changes made by the DRC government to those initially agreed breaches the provisions of the Financing Agreement signed on 3 April 2014 between the Government of the DRC and the World Bank (The World Bank 2018, p. 19). These changes constituted: changes to the selection of staff for the ADEPI; selecting a bidder while critical studies planned under the TA project were lagging behind schedule – bidding documents lacked critical information necessary for the bids to be evaluated properly (ibid., p. 18). According to the Bank, key information missing from the document included: clarity on the off-take arrangements, that is, terms governing the sale of power to South Africa, the mining companies, and SNEL; geotechnical and hydrological data; obligations relating to future Inga phases to protect the DRC's sovereign interests in subsequent Inga site developments; and applicable legal framework and tax regime (The World Bank 2018, pp. 18-19).

In the Cahora Bassa case study, the strategy was prevalent in the post-colonial era. The newly established FRELIMO government had opted to renege from the 1969 supply contract because of how *exploitative* the arrangement was towards the majority populace. The electricity tariff of 2 cents per KW was less than the international electricity flat rate – this in their view required

revision so that Eskom had to pay higher tariffs for the output. Following FRELIMO's repudiation of the contract, the apartheid government responded by creating, funding, training and arming RENAMO – a rebel group which sought to destabilise the FRELIMO government (Isaacman 2001, p. 218). The group attacked areas neighbouring the Cahora Bassa dam and sabotaged key infrastructures like power lines and sub-stations (ibid). Although the purpose for which the group was created was to destroy infrastructure in Mozambique, render the economy dysfunctional and undermine any prospects of growth and development under the FRELIMO-led government, the repercussions of their actions were far-reaching and implicated South Africa to an extent (Ibid.). For example, the destruction of nearly 4000 pylons cutting across the country had affected electricity exports by 50% (including to South Africa). Also, despite having signed a peace agreement in 1984, RENAMO forces remained embroiled in conflict with the FRELIMO-led government.

Experts in the field also identified trust as a crucial explanatory variable for the differences in outcomes between the Cahora Bassa and the Grand Inga cases. A respondent argued that *trust-issues* is the main challenge facing the latter case. He emphasised that the provision of electricity is dependent on the government and they often use this as leverage to push personal interests. According to this respondent, "the government pretends to know how to manage electric utilities but the time frame for the government is the next election, whereas for the electric utility, it is twenty-five years" (Trans-Africa Production (TAP), 2016).[24] Critiquing the institutional arrangement aimed to tackle reneging and trust issues, the respondent argued that the Agence Developpement du Project de Inga (ADEPI) as the World Bank's initiative was supposed to constitute the World Bank and all the sponsors. However, the DRC's naturalistic reaction to the proposal was "it is my country" and changed the institution to ADEPI-DRC while pushing for the project to begin before the end of 2016 as elections were due in November of the same year.[25] This hastiness would imply overlooking important environmental and international standard compliant studies required for dam construction.

Ruiters (2016) emphasised the importance of "regular contact" to ascertain trust between the actors, and a prerequisite for successful energy cooperation. This, she argues, is essential in

[24] Interview with respondent II from Trans-Africa Production (TAP), 2016.
[25] Ibid.

mitigating risks and signalling credible commitment to cooperating partners. To this extent, trust facilitated credible commitment in the Cahora Bassa case but not the Grand Inga case. The apartheid government in South Africa to some extent trusted the PCG to protect its energy interest in relation to the Cahora Bassa. As a common enemy was identified – the nationalist movements – both governments pooled resources to protect their respective interests.

6.2.6 Number of actors/financiers and transit country dynamics

Kenneth Oye (1986) argues that number of actors affects the outcomes of cooperation. The more the number of participants in a cooperative game, the more complex it becomes in achieving successful cooperation outcomes. That is, an N-player game is more complex than a two-person game. Against this backdrop, experts in the field have problematized the number of actors in the case studies as a hindrance to successful cooperation. Ruiters (2016) argues that in the Grand Inga case, the players are cross-border and have different interests. Marais (2016) echoes this argument citing that different countries have different political aspirations – this he argues influences their interests and preferences where regional energy cooperation is concerned. Another respondent (2016) highlighted that the key challenges facing the Grand Inga project is that there are "too many countries" and "not a high level of common interest" among the actors.[26]

Drawing on this perspective, it can be deduced that the Cahora Bassa case was less complicated and reached a successful outcome as the project was pioneered by two key actors – the Portuguese colonial administration and the apartheid government. The clarity of purpose, alignment and shared interest that is, both seeking to maintain a settler colony while embarking on development projects as a means to the end as well as *managed* power dynamics between the parties are all contributing factors to the successful outcome of the project. The same arguments can be made for Inga I and II. The primary actor in the construction and development of these projects was the Mobutu regime. Although funding from Western allies somewhat translated into acknowledging their interests, their interests were more in other sectors like the mining industry. The development project that was Inga I and II served as the means to achieving access to the DRC's mining sector.

[26] Interview with second respondent from Trans-Africa Project (TAP), 2016.

The multiplicity of actors in the Grand Inga case with vested interest in clean energy is arguably a contributing factor to the failure of the project. Although the common interest amongst these actors is (access to) sustainable energy development, it can be argued that it is also a means to achieving other goals in the DRC. South Africa's commitment to buy 25000 MW of the dam's output will improve the share of renewable energy consumption in its domestic consumption mix; however, it is also an avenue to push for continued presence in the DRC's mining, agricultural and telecommunications sectors. The World Bank as a development financial institution is a firm supporter of sustainable development projects including the construction of hydropower dams deemed as renewable energy sources, however, it is also an avenue to push its neo-liberal agenda through domestic institutional reforms for the purpose of democratising the DRC. This in their opinion, results in the DRC's ability to independently attract investments into the country by signalling credible commitment. From their perspective, institutional reforms result in transparency and accountability, which in turn informs credible commitment. The interest of the population base in the DRC is access to reliable, available, and affordable electricity. The government of the DRC's interest in the dam development is arguably centred on economic rent and political power. The variances in the interests of these actors complicate and undermine successful outcomes.

Ruiters (2016) underscores an important issue in hydropower dam development. Where such schemes are concerned, huge capital investments are required. Financiers are not always interested in the purpose or development agenda associated with such projects but in the profitability of the project. Ruiters (2016) emphasises that financiers are "all about profit". How the project is packaged financially is what will attract financiers. This becomes an important factor when the host government writes proposals for funding. It indicates that in most cases, the profitability of the project will take precedence over its developmental purpose.

6.2.7 Market and market proximity

A market base where offtakers can pay for electricity supply is fundamental to the functioning of the electricity industry. Countries with huge hydro potential need a lucrative market to supply electricity to. In the absence of such, the project is likely to stall as illustrated by the Grand Inga case study. A respondent reiterated this claim stating that, "to run a big power

station where there is no load is a big problem".[27] The findings in this study further emphasise the importance of a lucrative market. The Cahora Bassa dam output was exported to South Africa, a country deemed the most economically lucrative off-taker at that time, buying a bulk of the load. This not only guaranteed access to cheap energy for South Africa but it also meant financial security for the Portuguese colonial administration. The Grand Inga output is proposed to service several markets. South Africa had committed to buying 2500 MW of the proposed (based on the old plan) 40 000MW. Of the total output, the copper belt would get 1300MW (Barrie 2016). These cases show that having a market base to supply electricity output to is crucial for the development and an important facilitator of credible commitment; however, this factor alone is insufficient to achieve successful regional energy cooperation.

My findings further show that in addition to a lucrative market, the proximity of the market base to the supply centre is crucial. Barrie (2016) emphasises this argument drawing on the Grand Inga case study. He argues that the Congo River, which has the second highest flow after the amazon is located in Bas Zaire. The River flow is quite regular but there is no market for electricity in Bas Zaire and people who can pay for it. As a result, more money must be spent in building transmission lines and power stations at different intervals to transport the electricity generated there to a lucrative market. He adds that according to the DRC-SA treaty for electricity off-take, South Africa committed to take power at the border of DRC and Zambia and bring power to copper belt around Kolwezi and Lubumbashi (Barrie 2016). However, the cost of power stations alone was estimated at $12 billion and for transmission lines, another $4 billion is required. According to Barrie (2016), "if there was a [profitable] market next to Inga, it would have been built a long time ago." Thus, host governments are incentivised to pursue project development when a lucrative market is nearby.

6.2.8 The presence of an alternative investor

A distinctive factor between the Cahora Bassa and the Grand Inga case studies is that the latter had the option of an alternative investor. The collaboration between the Kabila government, the World Bank, and the African Development Bank rested on a restructuring of certain domestic institutions to enable sustainability, transparency, and accountability in the process

[27] Ibid.

of developing and operating the Grand Inga dam. The head of the ADEPI, Bruno Kapandji, made some statements following the World Bank's decision to suspend its role in the technical assistance phase of the Grand Inga project. In paraphrasing, Kapandji argued that the DRC has no choice than to develop Grand Inga, claiming ownership of the project – a Congolese project meant for the people of Congo. Kabila found the conditions tied to the technical assistance funds too costly for his regime. This is demonstrated in his scrutiny of the coordinator of the CGI3 who was deemed "too close" to international financial institutions and willing to compromise on their injunctions (Congo Research Group and Resource Matters 2019, p. 8). This would justify the need to source for an alternative funding source or investor to further project implementation. Conversely, for the Portuguese, there was no alternative buyer capable of improving the bankability of the project like South Africa. Hence, this variable is non-applicable to the Cahora Bassa case.

The themes discussed in this section are represented in the table below – it shows a comparison between the factors that facilitated or hindered credible commitment in the Cahora Bassa and the Grand Inga dam projects.

Table 3: Table showing the comparison of themes across the case studies

Theme	Cahora Bassa dam	Grand Inga project
Regime uncertainty and security	Facilitated	Hindered
Regime type and institutions	Facilitated	Hindered
Context and Interest	Facilitated	Hindered
External interference in domestic politics	Facilitated	Hindered
Trust	Facilitated: to a small extent	Hindered: to a large extent
Number of actors	Facilitated	Hindered
Market and Market proximity	Facilitated	Hindered
Alternative investor	Not applicable	Hindered

The Grand Inga case echoes the social dilemma between investors and host government as discussed in chapter three. Investors are constantly trying to make the cost of defection high to the extent that it surpasses the benefits of the cooperative initiative. On the other hand, host governments are constantly in search for cooperative initiatives that are costly to the extent that it motivates credible commitment, but the benefits thereof are higher. In the Grand Inga case, the Kabila government deemed the World Bank's terms of agreement too costly and threatening to its political aspirations. Resultantly, the government deemed it rational and strategic to renege from the agreement – counting as a loss to the World Bank that had sunk 6 per cent already into the project. In the Cahora Bassa case, the cost of defection was equally high – the PCG would have felt the perils of having a powerful South African neighbour with military capacity. However, the benefits for the PCG were higher in this case; hence it was strategically rational for the PCG to remain committed to the supply contract despite the disruptions by the nationalist movement – FRELIMO.

But the DRC's credible commitment track record has been on the decline especially where the World Bank is concerned. To this end, it can be argued that Kabila's signature to the financial agreement with the World Bank was more of a cynical commitment than a time inconsistency credibility problem. The Kabila government has arguably been in a repeated game with the World Bank. The latter has and still finances development projects in the DRC across various sectors of the economy including agriculture, infrastructure, and health. Its reputation in terms of credibly committing to an agreement has been substandard, causing to a large extent, investment fatigue from private investors. Irrespective of such track record, the World Bank and the African Development Bank saw it necessary to pursue another development project with Kabila's government. This begs the question, should development banks engage in such cooperative initiatives with a government that has poor credible commitment record? If many a chance are given to such governments, does this not truncate any prospects of withholding funds to condition the behaviour of the government to act or behave in a specified manner?

The rise of alternative funders to the West personified as strong emerging economies like India, China and Brazil, challenge the effort to promote the ideals of liberal democracy in Africa. These emerging economies are largely third world countries with an understanding of the plight of the third world in accessing funds for development purposes from international financial

institutions, and they offer an alternative. For one, the conditionalities set by Western donors or investors aim at re-structuring the political and economic structure of a country to align with the notion of liberal democracy. Such conditions could range from participation in international trade with limited protectionism and devaluing the domestic currency to adopting multi-party elections as well as investing in certain sectors of the economy deemed by World Bank experts to bring about development. These emerging economies are becoming key players in the investment field that such conditions particularly for African countries are highly limited or non-existent. For instance, it is common knowledge that a key condition for Chinese investment is the One-China policy. With emerging economies challenging the fundamentals of traditional Western investors and donors, it negatively affects any type of corrective mechanism that these traditional donors are trying to implement. The banding of the third world countries in their bid to provide alternative financing and rules or lack thereof to African countries exposes the short comings of Western investment. It reinforces the notion that international financial institutions have been biased and too strict on African countries. Their conditionalities only serve to promote liberal democratic principles to the detriment of the respective African political economy, largely. Tying democracy and good governance to loans or aid is part of a larger cold war struggle between the Eastern and the Western blocks.

Similarly, the PCG was in a repeated game setting with the apartheid government in South Africa hence the reputation of the former was valuable in the latter agreeing to the electricity supply agreement. As discussed above, when the ability of the PCG to maintain control over its colony – Mozambique in this case – became questionable and therefore implicate its reputation with the apartheid government, it solicited assistance from the latter. Resultantly, both exchanged intelligence, South Africa provided military and financial assistance to the PCG to fight off the liberation movement but also served its interest by cutting off all passages that linked the ANC movement to FRELIMO.

Where reputation was threatened or failed, institutions were set up to complement efforts. The credible commitment mechanisms employed in both cases were the setting up of organisational structure to manage the processes and affairs of the dam and the use of treaties or contracts. In the Cahora Bassa case, the terms of the contracts were renegotiated in the 1970s, 1980s, 2001, and 2007 – the bone of contention was electricity tariffs. In the Grand Inga case, the terms of

the contract were negotiated and signed by the stakeholders especially the host government. Yet, it did not serve to foster credible commitment by the Kabila government. Arguably, a comparison between both case studies show that when actors especially the host government sees a hydropower dam project to serve its interest, it is more likely to commit to achieve a successful outcome.

In conclusion, this chapter discussed the findings of this research in relation to the research questions for this study. It reiterated the discussions from the case study chapters on the nature of the credible commitment problems. It was established that both the Cahora Bassa and the Grand Inga dam case studies were riddled with time inconsistency problems that was further complicated by the lack of a supranational authority or an external agent to act in the position of a credible enforcer. As aforementioned, the primary role of a credible enforcer is to monitor compliance and punish defection in any cooperative arrangement. My analysis also shows how the Grand Inga case can be viewed as having a cynical commitment problem. The chapter goes on to restate that the credibility challenges in both cases were addressed using contracts and organisations.

To show why the mechanisms were able to successfully address the challenges of credible commitment in the Cahora Bassa case but not the Grand Inga case study, it was important to establish the factors that motivate or hinder credible commitment in large dam investment cooperation. Drawing on the narrative of both case studies, there were a number of recurring themes that cut across the cases. The study finds that regime uncertainty and security, though both terms differ along core security lines, facilitated credible commitment in the Cahora Bassa case but hindered it in the Grand Inga case. When the PCG saw that the certainty and security of its regime in Mozambique was threatened by the liberation movement, the Cahora Bassa became a tool to rope the apartheid government into ensuring that the PCG remained in the territory as it served both their energy and security interests. Whereas in the Grand Inga case, the exclusion of the Presidency from decision making on the Grand Inga threatened Kabila's political aspirations hence, a defection became rational in 2016.

Similarly, the type of regime within both cases proved to be an important factor in facilitating or hindering credible commitment. In the case of the Cahora Bassa, it represented collaboration

between two key strongman states. Whereas the Grand Inga under Kabila's regime largely represented his ability to replicate the strongman state in a post-colonial era underscored by liberal democratic principles. This analysis showed and affirmed Leeds (1999) argument that cooperation between two or more actors who share similar political, moral, and economic ideals are more likely to achieve a successful outcome that actors with varying perceptions and morals. That is, two democracies or two autocracies are more likely to achieve success outcomes in their collaborative arrangement as opposed to a democracy cooperating with a non-democracy. This was evident in the Cahora Bassa case – two colonial regimes successfully collaborated for the construction and operation of the dam. Whereas the ideals of Kabila's regime leaned towards features of a quasi-democracy which is contradictory to the World Bank's principle of liberal democracy. This lends credence to the importance of context in the cases. The case studies also highlight the importance of interest in attaining a successful outcome. The more actors especially host governments perceive credible commitment to an initiative to be in their interest, the more likely they are to comply to the terms of the agreement over time, as seen in the Cahora Bassa case.

In both cases, the purpose of interference in domestic politics was to protect the interest of the interferer. In the Cahora Bassa case, South Africa's interference in Mozambique was to the benefit of the Portuguese colonial government. It was aimed at fighting a common enemy – at first FRELIMO and later, RENAMO. Whereas in the Grand Inga case, although interference by the World Bank was meant to protect its investment and ensure that the project was devoid of opportunistic behaviour by the political head, the nature of the interference was on a more severe scale. That is, a strategic sector of the economy was excluded from the jurisdiction of the office of the Presidency and placed under the auspice of the Prime Minister and a Board of Directors comprising of Inga stakeholders. Unable to trust that such decision would not have an adverse effect on his political ambitions, it became rational for Kabila to renege on his commitment to the World Bank.

Credible commitment is easier to monitor in a smaller group than a larger group. Where multiple players are involved in a collaborative arrangement, it becomes more challenging to monitor compliance. As (D'Arcy & Nistotskaya, 2013) argue in most collaborative arrangements, the participants are assumed to be credible enforcers, monitoring each other's

behaviour and pointing out a defector. The number of stakeholders in the Grand Inga case is more than that of the Cahora Bassa, each having specific terms and conditions that must be met in order for the host government to access funds. In addition, the study finds that the availability of a market in proximity incentivises credible commitment by the host government. This is because the government has an interest in completing the project to earn rent from the sale of electricity, as seen in the Cahora Bassa case. But the presence of an alternative investor can thwart efforts at credible commitment especially an investor whose prerequisite to access funds is less rigid, as seen in the Grand Inga case study.

Having discussed the findings of this research in relation to the research question shaping the rationale for the study, the next chapter provides a synopsis of the research. It begins by reiterating the rationale for the study and situating it within a larger problem area in the field of International Relations. It summarises the core arguments made in this thesis, and the challenges encountered in the field. The chapter ends by re-emphasising the finding of the research and recommending areas for further research.

CHAPTER SEVEN: CONCLUSION

This study set out to examine the paradox of energy poverty in Africa: why, despite the abundance of hydro energy potential, is there a shortfall in electricity generation. The obvious answer to this question is that the vast existing potential remains underdeveloped despite the steady growth in population size and the increasing need for electricity as a catalyst for economic and human development in the region. Although there are large dams in Africa such as the Kariba (Zambia/Zimbabwe), the Askombo/Volta dam (Ghana) and the Cahora Bassa dam (Mozambique), these dams were constructed during colonial and early independence times. Thus, there has been an uneven pattern of large-scale hydropower dams in Africa amidst the growing need for access to, renewability, and sustainability in electricity production in the region. To address this question, I adopted a political economy lens that determined and examined the interplay between political and economic factors in shaping large dam cooperation outcomes in Africa. This assessment is anchored in the analytical framework of credible commitment. I argued that in the absence of such commitment from the host government, investors are likely to opt out of large dam projects yielding suboptimal outcomes for the government and the seventh sustainable development goal – [access to] affordable and clean energy in Africa.

Using descriptive statistics, I emphasised the significance of large hydropower dams to Africa's energy, economic and human development. Nature, Africa's potential and production compared to the rest of the world, and the possible spill-over effects of large dam development were the key factors used in consolidating the advocacy for such projects in Africa. The geographical and geological placement of the African continent and its bounded waters from the Mediterranean Sea to the Atlantic Ocean creates a natural incline to hydropower. Compared to other regions in the world, the analysis in chapter two showed that Africa lags in terms of exploiting available potential (Figure2), lending credence to the advocacy for large dam development. Also, when Africa was compared to other regions to assess whether the available existing hydropower potential would be sufficient to meet growing demands. The analysis showed that every other three regions – Americas, Asia-Oceania and Europe all had deficits depicted as high 'gross demand (kWh) in comparison to 'exploitable potential' (Figure 4). The spill over benefit associated with large dam development was explored. The assessment showed that high openness to trade was concentrated in North and Southern Africa (Figure 6). Thus, the statistical analysis lends credence to why hydropower should be a priority and an

opportunity for Africa. At face value, this notion is a given. Where there is an abundance of resources, it is only logical that host governments exploit them. Yet, studies show that in Africa there remains an undeveloped potential of over 400 megawatts according to the World Bank. Thus, it was imperative to examine the political economy dynamics to large dam development in Africa and situate this interplay with the problem of credible commitment.

The challenge of credible commitment concerns how to bind actors to an agreement over time and space. It exists in three major forms namely time inconsistency problems, cynical commitment and lack of a credible enforcer. Time inconsistency illustrates the fickle nature of an actor's commitment owing to uncertainty – where the preference for cooperation in advance changes when the future time comes. That is, despite the pledge in the present to act cooperatively to an agreement, at a future time defection may become rational. Whereas cynical commitment alludes to an actor's pledge to act cooperation yet there is no intention to credibly follow through on such a commitment. The lack of a credible enforcer is deemed necessary to monitor and incentivise compliance while credibly punishing defection thereby dissuading actors from creating credible commitment problems.

Using a game simulation, I examined the ubiquity of credible commitment problems in large dam development cooperation. In Africa, where such hydropower projects are concerned, the onus largely falls on the host government to overcome the challenges of and signal credible commitment to investors. This serves the dual purpose of attracting investments and *guaranteeing* a successful cooperation outcome – dam construction and operation. The simulation showed the divergence in preferences between the host government and the essential investor. The order of preference for the government was mutual benefit, government temptation, and status quo remains where no dam is built whereas the investor's priority is dam construction (mutual benefit) but prefers the status quo remains over government temptation. While acknowledging the more complex nature of such interaction, the thesis went on to examine why credible commitment problems emerge in large dam cooperation. It found that factors such as uncertainty, human nature, and number of actors among others creating an enabling environment for credibility problems.

Following this, it was crucial to examine existing literature on how to overcome credibility problems in cooperation. I categorised the mainstream arguments into three key elements namely interests, institutions, and iteration – the three 'I's". The bone of contention in the interest literature was the extent to which self-interest of actors undermine or facilitate credible commitment. Self-interest as a hindrance to credible commitment results from transaction cost and opportunism. Defined as the cost of participating in economic exchange, Williamson (1979) argued that transactions produce coordination costs of monitoring, controlling, and managing transactions. As a result, such costs shape decision making (Young 2013). Such costs influence an actor's decision to act opportunistically especially within a cooperative initiative. Whereas scholars like Oye (1986), Axelrod and Keohane (1986) and Stone (1975) argue that an alignment in the interests of cooperating actors is a strong determinant of a successful outcome. This literature emphasised the importance of co-dependency and compatibility of interests among the host government and investors as imperative to overcome credible commitment problems.

The literature on institutions emphasised the importance of regulating and constraining human interaction through mechanisms like formal and informal rules and norms, regulations, organizational structures, and contracts. It is argued that his creates an enabling environment for utility investments (Begara, Henisz & Spiller 1998). Critique to this argument point to the political underpinning of institutions especially in countries where the autonomy of the three arms of government – executive, legislation, and judiciary – are lacking. Another critique emphasised the context within which institutions emerge citing that they are mostly created to promote the interests of their creators (North 1990). On iteration, the argument is that in repeated interaction among actors (host government and investors alike), credible reputation becomes the dominant strategy. The host government strives towards building a good reputation with the investors to establish trust, an important factor in overcoming credibility problems. This reputation whether good or bad, tends to precede the host government through *gossip* and can shape prospects of cooperation. The study went on to test the validity of these explanations using the Cahora Bassa and the Grand Inga projects as case studies.

To achieve this goal, it was important to provide a historical context to the development of the projects, examine the political and economic drivers of the projects and their characteristics,

the nature of the credible commitment problems and how credible commitment was established drawing on the explanations in the theoretical framework of this study. The history of both projects was documented albeit in no chronological order. This assessment showed that the Cahora Bassa dam was nested in a larger regional security dynamic between the Portuguese colonial government, apartheid South Africa and to an extent, the British colonial government. Thus, the political factors that shaped the economics of the project were Portugal's quest for a settler colony in Mozambique and acceptance by then apartheid South Africa. The economic driver for the development of the project was South Africa's economic buoyance and *future* need for electricity. As a result, the Cahora Bassa dam was built with the sole purpose of supplying electricity to the South African market with a portion designated for domestic consumption in Mozambique.

The nature of the credible commitment across the three epochs identified in the Cahora Bassa case study was time inconsistency problems. These problems emerged because of the uncertainty surrounding the fate of the Portuguese colonial government in Mozambique owing to violent uprisings and struggle for independence across Portuguese territories in Africa from the late 1950s. Further exacerbated by the rising external debt Portugal experienced at that time, it was unable to effectively curb liberation struggles in its territories. This fuelled the already existing perception of the Portuguese colonial authority by the apartheid government in South Africa as weak, igniting the intention to encroach and capture Mozambique as its territory. Following Mozambique's independence in 1975, the newly installed FRELIMO government revised the terms of the Supply contract signed in 1969 between the colonial governments, creating a time inconsistency problem. By 1984, a new agreement between the three actors – apartheid government, Portuguese colonial government and the government of the Republic of Mozambique was signed. By the 2000s, a demand by Mozambique through the HCB for an increase in electricity tariff paid by South Africa led to the former reneging on its commitment to supply electricity to latter. This created a time inconsistency problem.

In examining how credible commitment was established, I tested the arguments made in the literature on the subject matter. I found that all three explanations in the theoretical literature were applicable in the Cahora Bassa case study however, there was need to emphasise the role of political will and commitment by the Portuguese colonial government. In terms of interest,

there was an alignment of interest between both governments along energy and core security lines. Both wanted the dam built, both wanted to remain settler colonies, and both wanted to repress any acts of uprising to protect their shared colonial interests in their respective colonies. This led to the subsequent cooperation between the governments beyond energy security issues in the region. The repeated interaction between both governments was instrumental in the Portuguese building a credible reputation with the apartheid government to warrant their assistance in the fight against liberation movements in Mozambique. Also, the electricity supply agreements between the governments served to constrain the economic exchange between both parties as it consisted of clauses that placed the bargaining power in apartheid South Africa's hands. Although following the introduction of a *new* actor – the independent Republic of Mozambique government – the Portuguese credible reputation was tested, and the institutions were undermined. However, this did not affect the development of the dam as it occurred post dam construction.

In the Grand Inga case, the history of the dam emphasised the commitment by different governments in the DRC to build the project. Although Mobutu pioneered the development and commissioning of Inga I and II in 1972 and 1982, respectively. Inga III has been a topic of negotiation for decades spanning subsequent governments. Notable in the historical account is former President Joseph Kabila's strides in reigniting and attempting to materialise the project. The finding of this account showed that the project is nested in a larger domestic political rather than regional dynamics as with the Cahora Bassa case study. The political factors that shaped the outcome of the project were Kabila's quest for power, control, and legacy within the DRC and as a reference point, internationally. As documented in my discussion chapter, his political reign was marred by various atrocities such as political repression and corruption. Thus, by initiating and presiding over the implementation of Inga III, one can argue (and hope) would have been one of the positive (perhaps the only) highlights of his term in office. The economic drivers of the project were the sale of electricity to South Africa in accordance with the 2013 MoU signed between former president Jacob Zuma and Kabila, the need to supply electricity to Katanga – the mining sector and mainstay of the DRC's economy, and the pressure to attract investments for the development of the project within the limited time frame (Kabila's term in office).

The nature of the credibility problem in this case study was time inconsistency and to an extent, cynical commitment problems. The finding of this study showed that the extent to which the problem was time inconsistency was owing to the fact that Kabila's agreement to the terms and conditions for World Bank funding and subsequent signing of the Financing agreement in April 2014 was no longer rational by the end of 2016. This was depicted by the World Bank pulling out of the project by September 2016 citing that the government (Kabila) had changed the direction of the project in contravention of the initial terms.

In the Grand Inga case, this study found that the explanations from the theoretical framework on how to establish credible commitment seemed questionable. Firstly, there existed a shared interest between the two major actors – Kabila's government and the World Bank – both wanted the dam built and fully operational. Secondly, institutions were established to manage the implementation of the project. Most notable of these institutions was the establishment of the ADPI. Finally, there was repeated interaction between both parties albeit not with Kabila himself but the institutions that were created to ensure accountability and transparency in the process of project implementation. As noted in the chapter five, the CG3 constantly provided progress reports to the World Bank as an incentive and basis for further funding.

Following the difference in outcome despite the presence of the three "I's" in both case studies, it was important to do a cross-case thematic analysis to examine the factors that facilitated or hindered credible commitment. The themes examined were regime uncertainty and security; regime type and institutions; context and interest; external influence in domestic politics; trust; number of actors; market and market proximity; and the presence of alternative investors. It was important to explore the extent to which uncertainty about a government's regime security shaped the decision to credibly commit to large dam cooperation. In the Cahora Bassa case, the *fear* of losing its hold on Mozambique motivated the Portuguese colonial government to act swiftly and credibly in its commitment to South Africa regarding the Cahora Bassa. By engaging in energy security relations, Portugual was able to further synchronise the regime security issues with that of South Africa to the extent that a threat to the former's regime security meant a threat (whether direct or indirect) to the latter's. In the Grand Inga case, the same *fear* was imminent however cooperation with the World Bank would not serve to

safeguard Kabila's regime. It would rather facilitate or encourage it given the poor commitment track record the government has with the World Bank.

In terms of the type of regime and the institutions established, the finding of this study showed that cooperation between two 'strong men' states contributed to the successful outcome in the Cahora Bassa as both parties (especially the Portuguese who had more at stake) had a plan and followed through without considering the opinions of its constituents made up of majority Africans and minority white migrants. Also, the context within which the strong states existed was 'convenient'. That is, the 1950s and 1960s were period of colonisation and early struggle for independence and colonial regimes were not associated with democratic principles. Kabila's attempt to replicate such a state in a modern era of liberal political and economic principles adds to his regime being unpopular with key international financial institutions.

Furthermore, in the Cahora Bassa case, the interests of both parties were aligned – dam construction and electricity supply. The Cahora Bassa case showed that South Africa's interference in Mozambique was largely in partnership with the Portuguese colonial government while in the DRC case, the terms for which technical assistance was a reflection of the bargaining power of the World Bank and the use of that power in promoting (and restructuring domestic institutions along the lines of) neoliberal principles, within reason.. Kabila's decision to undermine the agreement lends credence to the finding of this study that the power dynamics between both parties contributed to the failed outcomes, although not explored extensively. Trust was identified as one of the key explanatory variables in my thematic analysis resulting in the facilitation and hindrance in the Cahora Bassa and Inga case, respectively. The number of actors in the Cahora Bassa case was largely two major actors whereas in the Inga dam case, although the World Bank and the DRC government were the two major actors, there were other actors at play including but not limited to the Republic of South Africa, Eskom, SNEL, the DBSA, the AfDB, the Katanga province, mining community and the citizenry.

Market and market proximity emerged as an explanatory variable from the interviews conducted for this research. The finding of this study showed that host governments are incentivised to pursue project development (at all cost) when there is a lucrative market in close proximity. The study also found that the presence of an alternative investor in the Inga case

contributed to Kabila's repudiation. Chinese aid, loan, and foreign direct investments in comparison to their Western counterparts have fewer requirements and are deemed less intrusive in domestic political affairs. As a result, there tends to be a preference for this approach to economic partnership by most African governments; Kabila was no exception. In addition to these, the study also found that the political will and commitment of the host government is crucial for a successful outcome where large dam development is concerned.

The findings of this study add to the broader debate on development cooperation and the political economy of energy security in Africa. The political economy of hydropower is an understudied aspect in the field and this thesis contributes to this knowledge base. By examining the political economy of hydropower investments in Africa through the problem of credible commitment, the study goes beyond the mainstream cost-benefit analysis to explore factors that incentivise actors to choose strategies that tend towards the collective goal. While the study anchors close to the broader debates on investments, it is parsimonious in its focus on hydropower investments in Africa.

Hydropower remains a topical issue in Africa's energy development discourse. As at the time of completing this research, several events were on-going in the African continent in relation to large dam development. As stated in the fifth chapter of this thesis on the Grand Inga case study, a new president Felix Tshisekedi was inaugurated in January 2019. Negotiations for the completion of the feasibility studies and implementation of the project were on-going between the ADPI (with Kabila as an integral part of the institution) and the Chinese government albeit no definite decision has been made regarding the course of project implementation. Thus, an area for further research is to explore the role of China as an alternative investor in shaping the dam development outcomes. One of the critiques levelled against Western development partnerships by African governments is the issue of power dynamics. It would make an interesting study to examine these issues using the Grand Inga case study.

Furthermore, hydro politics on the Ethiopian Grand Renaissance Dam had resurfaced at the time of completing this research. Egypt and Sudan (downstream countries) challenged Ethiopia over the filling and operation of the Grand Renaissance Dam. Constructed on the Nile River's main tributaries, the Blue Nile in Ethiopia, the dam is designed to generate 6,000 megawatts of electricity. This implies that the dam's reservoir can hold more than 70 billion cubic metres

of water – nearly half of the Nile's annual flow (Tekuya, 2020). The implication of this dam on downstream countries like Egypt and Sudan would mean a reduction in the flow of the Nile water on which these countries are dependent on for water and food security. Talks and negotiation on a treaty that would address the filling of the dam to minimise the effects on downstream countries were underway at the time of completing this research, despite the signing of the Declaration of Principles in 2015 (Tekuya, 2020). It would be interesting to examine the hydro and geopolitics of the project drawing on the theoretical framework of credible commitment.

Although, my study adopted a mixed-method research strategy, the quantitative aspect was largely descriptive in nature. It served to tease out facts depicting the state of hydropower energy potential, production and demand in Africa compared to other continents in the world to make a case for increased investments in large dam development in the region. This study could be replicated quantitatively to examine indicators beyond the parameters discussed in this research while drawing conclusions on socio-economic, environmental, technical and policy implications of large dam development.

Bibliography

Africa Confidential. 2019. “Pouring cold water on the Mega Dam.” 19 December. https://www.africa-confidential.com/article/id/12823/Pouring_cold_water_on_the_mega_dam.

African Development Bank. 2020. *Bank Group Mandate.* https://www.afdb.org/en/topics-and-secotrs/sectors/water-supply-sanitation/bank-group-mandate.

African Development Bank Group . 2013. *Inga Site Development and Electricity Access Support Project (PASEL).* Accessed 2017. https://www.afdb.org/fileadmin/uploads/afdb/Documents/Project-and-Operations/Multinational-Inga_Site_Development_and_Electricity_Access_Support_Project_PASEL_-_Appraisal_Report1.pdf.

African Development Bank Group. 2017. *History.* Accessed 2017. https://www.afdb.org/en/about-us/corporate-information/history/.

African Union. 2018. “Technical Paper on Grand Inga Hydropower Project which is one of the Agenda 2063 Flagship Projects.” Accessed 2018. https://au.int/sites/default/files/newsevents/workingdocuments/33313-wd-technical_paper_on_grand_inga_hydropower_project_one_of_the_agenda_2063_flagship_projects_e.pdf.

Agéncia de Informacao de Mocambique. 2017. *Mozambique: Cahora Bassa shares to be sold on Stock Exchange.* Accessed 2018. http://allafrica.com/stories/201711280929.html.

Aimé, Banza Ilunga. 2015. “Des Conditions Juridiques Necessaires a la Modernisation et a l'Extension du Barrage Hydraulique d'Inga.” *KAS African Law Study Library* 233-251.

Albert, Eleanor. 2017. “China in Africa.” *Council on Foreign Relations.* Accessed 2018. https://www.cfr.org/backgrounder/china-africa.

Alence, Rod. 2005. “Evading the Resource Curse in Africa: Economics, Governance and Natural Resources.” *Institute of Global Governance* (52).

Aljazeera. 2016. *Deal Finalised on Peaceful Political Transition in DRC.* New Report, Aljazeera. https://www.aljazeera.com/news/2016/12/deal-finalised-peaceful-political-transition-drc-161231182050153.html.

Anderson, H. V. 2001. *Underwater Constructing using Cofferdams.* Arizona: Best Publisihing Company.

Ang, Ien. 2011. “Ethnicities and our Precarious Future.” *Ethnicities* 11 (1): 27-31.

Axelrod, Robert, and Robert O Keohane. 1986. “Achieving Cooperation under Anarchy: Strategies and Institutions.” In *Cooperation under Anarchy*, by Kenneth A Oye. New Jersey: Princeton University Press.

Azevdo, Mario J. 1980. “A Sober Commitment to Liberation? Mozambique and South Africa 1974-1979.” *African Affairs* 79 (317): 567-584. http://www.jstor.org/stable/721895.

Barclay, P. 2010. “Harnessing the Power of Reputation: Strengths and Limits for Promoting Cooperative Behaviors.” *Evolutionary Psychology: An International Journal of Evolutionary Approaches to Psychology and Behavior* 10: 868-883.

Barham B. L., Chavas J., and Coomes O.T. 1998. “Sunk Costs and the Natural Resource Extraction Sector: Analytical Models and Historical Examples of Hysteresis and Strategic Behaviour in the Americas.” *Land Economics* (University of Wisconsin Press) 74: 429-448.

Bayart, Jean-Francois. 2009. *The State in Africa: The Politics of the Belly.* Cambridge: Polity.

Becker, Manuel, Thomas Dörfler, and Thomas Gehring. 2018. “Credible Commitment without Independent Regulatory Agent: Evidence from the Security Council's United Nations Compensation Commission.” *Regulation & Governance* 12: 395-412. doi:doi:10.1111/rego.12195.

Begara, Mario E, Witold J. Henisz, and Pablo T. Spiller. 1998. “Political Institutions and Electric Utility Investment: A Cross-Nation Analysis.” *California Management Review* 40 (2): 18-35.

Begg, Alan. 1988. “Southern Africa Record.” *South Africa Institute of International Affairs* (51): 1-42.

Begg, Alan. 1984. “Southern Africa Record.” *South African Institute of International Affairs* (37): 1-67.

Bertieaux, Raymond. 1956. “Belgian Congo 1955.” *Civilisations* (Institut de Sociologie de l'Universite de Bruxelles) 6 (3): 473-482. https://www.jstor.org/stable/41231288.

Biswas, Shampa. 2016. “Postcolonialism.” In *International Relations Theories: Discipline and Diversity (4th edition)*, by Tim Dunne, Milja Kurki and Steve Smith, 219-235. Oxford University Press.

Bohannan, Paul, and Philip Curtin. 1988. *Africa and Africans.* Third Edition. Waveland Press Inc.

Bromiley, Philip, and Larry L. Cummings. 1995. “Transaction Costs in Organizations with Trust.” *Research on Negotiations in Organizations* (JAI Press Inc.) 5: 219-247.

Bromley, D B. 1993. *Reputation, Image and Impression Management.* New York: Wiley.

Brunetti, Amyo, and Beatrice Weder. 1997. *Investment and Institutional Uncertainty: A Comparative Study of Different Uncertainty Measures.* The World Bank.

Brunner, Steffen, Christian Flachsland, and Robert Marschinski. 2012. “Credible Commitment in Carbon Policy.” *Climate Policy* 12 (2): 255-271.

Bungane, Babalwa. 2016. *DRC: Inga 3 to proceed without EIA, says International Rivers.* Accessed 2017. https://www.esi-africa.com/drc-inga-3-proceed-without-eia-says-international-rivers/.

Buskens, Vincent. 1998. “Social Networks and the Effect of Reputation on Cooperation.” *6th International Conference on Social Dilemmas.* 1-18.

Butterworth, John, and Jean de la Harpe. 2009. “Grand Designs: Corruption Risks in Major Water Infrastructure Projects.” Accessed February 2020. https://www.cmi.no/publications/3517-grand-designs-corruption-risks-in-major-water.

Cadwell, Cam, and Mayra Canuto-Carranco. 2010. “"Organizational Terrorism" and Moral Choices - Exercising Voice when the Leader is the Problem.” *Journal of Business Ethics* 97 (1): 159-171.

Campus, F. 1958. “L'amenagement hydroelectrique du fleuve Congo a Inga.” *Memoires in-8, Novelle serie* Tome VI (fasc 6).

Chalmers, Robyn. 1998. “Cahora Bassa Power to Flow after 16 Years.” Business Day.

Cipriano, Amilcar, Colin Waugh, and Mathikizana Matos. 2015. *The Electricity Sector in Mozambique: An Analysis of the Power Crisis and its Impact on the Business Environment.* Support Program for Economic and Enterprise Development, USAID, USAID.

Collier, Paul. 2007. *The Bottom Billion: Why the Poorest Countries are failing and what can be done about it.* Oxford: Oxford University Press.

Collier, Paul, and Catherine Pattilo. 2000. “Investment and Risk in Africa.” In *Investment and Risk in Africa: Studies on the African Economies*, by Paul Collier and Catherine Pattilo. London: Palgrave Macmillan.

Congo Research Group and Resource Matters. 2019. *Inga III: Kept in the Dark: How the World's Largest Hydropower Site is Being Negotiated Behind Closed Doors.* Congo Research Group and Resource Matters. doi:http://congoresearchgroup.org/wp-content/uploads/2019/10/GEC_Resource-Matters_Inga-III_EN_final-2.pdf.

Congressional Research Service. 2019. *Democratic Republic of Congo: Background and U.S. Relations.* Congressional Research Service Report, R43166, Congressional Research Service. https://fas.org/sgp/crs/row/R43166.pdf.

Correia, Paulo, and Grietjie Verhoef. 2009. “Portugal and South Africa: Close Allies or unwilling Partners in Southern Africa during the Cold War?” *Scientia Militaria, South African Journal of Military Studies* 37 (1).

Cowhey, Peter F. 1993. “Domestic Institutions and the Credibility of International Commitment: Japan and the United States.” *Journal of International Organization* 47 (2): 299-326.

Coyne, Christopher J, and Peter J Boettke. 2009. “The Problem of Credible Commitment in Reconstruction.” *Journal of Institutional Economics* 5 (1): 1-23.

Cravinho, João G. 2004. “Mozambique Economy.” In *Regional Surveys of the World: Africa South of the Sahara* , by Katharine Murison, edited by Katharine Murison. London/New York: Europa Publications.

Danilovic, Vesna. 2001. “The Sources of Threat Credibility in Extended Deterrence.” *Journal of Conflict Resolution* 45 (3): 341-369.

D'Arcy, Michelle, and Marina Nistotskaya. 2013. “Credible Enforcement before Credible Commitment: Exploring the Importance of Sequencing.” *QoG Working Paper Series* 4: 1-32.

Davis, Lance E, Douglass C North, and Calla Smorodin. 1971. *Institutional Change and American Economic Growth.* London: Cambridge University Press.

Department of Foreign Affairs, Pretoria. 1984. “The Cahora Bassa Agreement.” *Contract.* Doornfontein, Johannesburg: Perskor.

Development Bank of Southern Africa. 2013a. *DBSA as an Organisation.* Accessed 2017. https://www.dbsa.org/EN/About-Us/Pages/About-Us.aspx.

—. 2013b. *Welcome to the Development Bank of Southern Africa.* Accessed 2017. https://www.dbsa.org/EN/Pages/default.aspx.

Dixit, Avinash, and Barry J. Nalebuff. 1994. “A New View of Investment.” In *Investment under Uncertainty*, by Avinash Dixit and Barry J. Nalebuff. Princeton, New Jersey: Princeton University Press.

D'Orfeuil, A T. 1953. “La Zone Monetaire Escudo.” *Revue économique* 4 (6): 884-900.

Egré, Dominique, and Joseph C. Milewski. 2002. “The Diversity of Hydropower Projects.” Edited by Frans Koch. *Energy Policy* 30 (14): 1225-1230.

Emerson, Stephen A. 2014. *The Battle for Mozambique: The Frelimo Renamo Struggle, 1977-1992.* Pinetown: Helion and Company.

Eurelectric. 1997. *Study on the Importance of Harnessing the Hydropower Resources of the World: Hydropower and other Renewabe Energies Study Committee.* https://www.Iandsvirkjun.com/media/enska/about-us/Study%20on%20the%20Importance%20of%20Harnessing%20the%20Hydropower%20Resources%20of%20the%20World.pdf.

European Investment Bank, interview by Ekeminiabasi Eyita-Okon. 2018. *The Inga III dam development*

Evans, Anthony J. 2015. “The Financial Crisis in the United Kingdom: Uncertainty, Calculation, and Error.” In *The Oxford Handbook of Austrian Economics*, by Peter J Boettke and Christopher J Coyne. New York: Oxford University Press.

Fabricius, Peter. 2016. 10 August. https://issafrica.org/iss-today/inga-dream-again-deferred.

Fair, Denis. 1987. “Electric Power in Africa.” *Africa Insight* 17 (3): 167-176.
Fang, Songying, and Erica Owen. 2011. “International Institutions and Credible Commitment of Non-Democracies.” *The Review of International Organizations* 6 (2): 141-162.
Farley, Jonathan. 2008. *Southern Africa.* London and New York: Routledge: Taylor and Francis Group.
Fauvet, Paul. 2012. *Mozambique to own Cahora Bassa.* Accessed 2017. https://www.iol.co.za/business-report/international/mozambique-to-own-cahora-bassa-1276132.
Fearnside, P M. 2004. “Greenhouse Gas Emissions from Hydroelectric Dams: Controversies provide a Springboard for Rethinking a Supposedly "Clean" Energy Source.” *Climatic Change* 66: 1-8. doi: https://doi.org/10.1023/B:CLIM.0000043174.02841.23.
Fearon, James D. 1994. “Domestic Political Audiences and the Escalation of International Disputes.” *American Political Science Review* 88 (3): 577-592.
First, Ruth. 1974. “Southern Africa after Spinola.” *Ufahamu: A Journal of African Studies* 4 (3): 88-108.
Floricel, S., and R Miller. 2001. “Strategizing for Anticipated Risks and Turbulence in Large-Scale Engineering Projects.” *International Journal of Project Management* 19: 445-455.
Food and Agriculture Organization. 2008. “Hydropower Resource Assessment in Africa.” *Water for Agriculture and Energy in Africa: The Challenges of Climate Change.* Libya: United Nations Organisation for Food and Agriculture. 128-144.
Førsund, F. R. 2015. *Hydropower Economics.* 2nd Edition. New York: Springer.
Freedom House. 2007. *Congo, Democratic Repubic of (Kinshasa).* https://freedomhouse.org.
Frick, K. T. 2008. “The Cost of the Technological Sublime: Daring Ingenuity and the New San Francisco-Oakland Bay Bridge.” In *Decision-Making on Mega-Projects: Cost-Benefit Analysis, Planning and Innovation*, by H. Priemus, B. Flyvberg and B. van Wee, 239-262. Cheltenham: Edward Elgar Publishing Limited.
Fuhrmann, Matthew, and Todd S Sechser. 2014. “Signalling Alliance Commitments: Hand-Tying and Sunk Costs in Extended Nuclear Deterrence.” *Journal of Political Science* 58 (4): 919-935.
Funada-Clasen, Sayaka. 2012. *The Origins of War in Mozambique: A History of Unity and Division.* Translated by Masako Osada. Tokyo: Ochanomizu Shobo Co Ltd.
Gagnon, L, and J F. V. D Vate. 1997. “Greenhouse Gas Emmissions from Hydropower.” *Energy Policy* 25 (1): 7-13.

Gasparro, Kate. 2017. “To be "dam"-ed: Navigating Stakeholder Relations to bring Energy to Africa with Inga 3.” *Case study: The Leadership Academy for Development*, 1-17.

Gaubatz, Kurt T. 1996. “Democratic States and Commitment in International Relations.” *International Organizations* 50 (1): 109-139.

Gellert, Paul K, and Barabara D. Lynch. 2004. “Mega-projects as Displacements.” *International Social Science Journal* 55 (175): 15-25.

Ghemawat, Pankaj. 1991. *Commitment: The Dynamic of Strategy*. New York: The Free Press.

Ginsburg, Tom, Svitlana Chernykh, and Zachary Elkins. 2008. “Commitment and Diffusion: How and Why National Constitutions Incorporate International Law.” *University of Illinois Law Review* 1: 201-238.

Gnassou, Laure. 2019. “Addressing Renewable Energy Conundrum in the DR Congo: Focus on Grand Inga Hydropower Dam Project.” *Energy Strategy Reviews* 26: 1-6.

Gottschalk, Keith. 2016. “Hydro-politics and Hydro-power: The Century-long Saga of the Inga project.” *Canadian Journal of African Studies* 50 (2): 279-294.

Governments of the DRC and South Africa. 2013. “Treaty on The Grand Inga Hydropower Project Between The Republic of South Africa and the Democratic Republic of Congo.” http://pmg-assets.s3-website-eu-west-1.amazonaws.com/141104treaty.pdf.

Green, N, B K Sovacool, and K Hancock. 2015. “Grand Designs: Assessing the African Energy Security Implications of the Grand Inga Dam.” *African Studies Review* 58 (1): 133-158.

Gruver, Ryan, Edward Lieb, Michael Shen, Wendy Wei, and Dylan West. 2014. “Damming the Congo: A Cost-Benfit Analysis of the Inga 3 Hydropower Project.” *Energy & Energy Policy* 1-49.

Gürbüz, A. 2006. “The Role of Hydropower in Sustainable Development.” *European Water* 13 (14): 63-70.

Haider, H, and B Rohwerder. 2015. *Political Economy and Governance in the Democratic Republic of Congo (DRC)* . https://assets.publishing.service.gov.uk/media/57a08966e5274a31e00000 70/HDQ1252.pdf.

Hathaway, T, and L Pottinger. 2008. “The Great Hydro-Rush: The Privatization of Africa's Rivers.” In *Electric Capitalism: Recolonising Africa on the Power Grid*, by D McDonald. HSRC Press.

Hathaway, Terri. 2005. “Grand Inga, Grand Illusions?” *World Rivers Review* 20 (2): 6-7.

Henriksen, Thomas H. 1973. “Portugal's Changing Fortunes in Africa.” *Current History (pre-1986)* 64 (000379): 106-131.

Hidroeléctrica de Cahora Bassa. 2017. “Award of the Contract to the ZAMCO Consortium for the Construcotn of Cahora Bassa Dam.” Accessed 2017.

http://www.hcb.co.mz/eng/Company/Historial/Award-of-the-Contract-to-the-ZAMCO-Consortium-for-the-Construction-of-Cahora-Bassa.

Higgs, Robert. 1997. “Regime Uncertainty: Why the Great Depression lasted so long and why Prosperity resumed after the War.” *The Independent Review* 1 (4): 561-590.

His Majesty Stationery Office. 1930. *Convention Between His Majesty's Government in the Union of South Africa and the Government of the Portuguese Republic Regarding Native Labour from Mozambique, Railway Matters and Commercial Intercource, Pretoria, 11 September 1928.* Convention, London: His Majesty Stationery Office, 10-11.

Hoes, OAC, LJJ Meijer, RJ van der Ent, and van de Geiser. 2017. “Systematic High-Resolution Assessment of Global Hydropower Potential.” *PLos ONE* 12 (2).

Hudson, Heidi, and Henning Melber. 2014. “Contextualising African Identities, Othering and the Politics of Space.” *Africa Insight* 44 (1): 1-6.

International Commission on Large Dams. 2011. Accessed 2018. http://www.icol-cigb.net/GB/dams/definition_of_a_large_dam.asp.

International Development Association (IDA). 2018. *What is IDA?* Accessed 2018. http://ida.worldbank.org/about/what-ida.

International Renewable Energy Agency. 2014. *Estimating the Renewable Energy Potential in Africa: A GIS-based Approach.* IRENA.

Isaacman, A, and C Sneddon. 2000. “Toward a Social and Environmental History of the Building of Cahora Bassa Dam.” *Journal of Southern African Studies* 26 (4): 597-632.

Isaacman, Allen. 2001. “Domesticating a White Elephant: Sustainability and Struggles over Water, the Case of Cahora Bassa Dam.” *Zambezia* XXVII (ii): 199-228.

Isaacman, Allen, and Barbara Isaacman. 2013. *Dams, Displacement, and the Delusion of Development: Cahora Bassa and its Legacies in Mozambique, 1965-2007.* Ohio: Ohio University Press.

Jacquemot, Pierre. 2017. “En République Démocratique du Congo, Inga, le plus Grand Barrage Hydroélectrique du Monde, Encore a l'état de Projet.” *Afrique Contemporaine* 1-2 (261-262): 252-253. https://www.cairn.info/revue-afrique-contemporaine-2017-1-page-252.htm#.

Katzenellenbogen, Simon E. 1982. *South Africa and South Mozambique: Labour, Railways and Trade in the Making of a Relationship.* Manchester: Manchester University Press.

Keet, André. 2014. “Epistemic 'Othering' and the Decolonisation of Knowledge.” *Africa Insight* 44 (1): 23-37.

Kjaer, Poul F. 2010. “Constitutionalizing Governing and Governance in Europe.” In *Rule of Law and Democracy: Inquiries into Internal and External Issues*, by L. Morlino and G Palombella. Leiden/Boston: Brill.

Klein, J. 2019. *What in the World is a ROFR?* https://marksklein.com/wp-content/uploads/2019/04/What-in-the-World-is-a-ROFR-GearedUp2019Issue1.pdf.

Koblentz, Gregory D. 2013. "Regime Security: A New Theory for Understanding the Proliferation of Chemical and Biological Weapons." *Contemporary Security Policy* 34 (3): 501-525. doi:10.1080/13523260.2013.842298.

Koremenos, B. 2005. "Contracting around International Uncertainty." *American Political Science Review* 99 (4): 549-565.

Kusakana, K. 2016. "A Review of Energy in the Democratic Republic of Congo." *ICDRE: 18th International Conference on Desalination and Renewable Energy*. 1-10.

Le Courier d'Afrique. 1969. "Inga Power Project Designed to meet Future Needs." In *Translations on Sub-Saharan Africa, Issues 781-790*, translated by United States Joint Publications Research Service, 47-51. Washington, D.C.: United States Joint Publications Research Service.

Leeds, Brett A. 1999. "Domestic Political Institutions, Credible Commmitments, and International Cooperation." *American Journal of Political Science* 43 (4): 979-1002.

Lempérière, F, and X de Savignac. 2013. "The Potential Roles of Major African Rivers." *Hydrocoop.* http://www.hydrocoop.org/african-rivers-potential-roles/print/.

Levy, B., and P. T. Spiller. 1994. "The Institutional Foundations of Regulatory Commitment: A Comparative Analysis of Telecommunications Regulation." *Journal of Law, Economics, and Organization* 10: 201-246.

Lezhnev, S. 2016. *A Criminal State: Understanding and Countering Institutionalized Corruption and Violence in the Democratic Republic of Congo'.* Enough Project. https://enoughproject.org/files/A_Criminal_State_Enough_Oct2016_web.pdf.

Lumbroso, D, A Hurford, J Winpenny, and S Wade. 2014. *Harnessing Hydropower: Literature Review.* Department for International Development (DFID), Government of the UK.

Mabongunje, Akinlawon L., and Robert K.A. et al. Gardiner. 2019. *Africa: Continent.* https://www.britannica.com/place/Africa.

Machel, Samora, interview by John Saul. 1974. *Introduction to Mozambique: Sowing the Seeds of Revolutions* 3-5.

Mailath, George J, and Larry Samuelson. 2006. *Repeated Games and Reputations: Long-Run Relationships.* New York: Oxford University Press.

Manning, Carrie L. 2002. *The Politics of Peace in Mozambique: Post-Conflict Democratization, 1992-2000.* London: Praeger Publications.

Marks, Shula. 1999. *Southern Africa.* Vol. IV, in *The Oxford History of the British Empire: The Twentieth Century,* edited by J. Brown. Oxford University Press.

Maupin, Agathe. 2015. “Energy and Regional Integration: The Grand Inga Project in the DR Congo.” In *A New Scramble for Africa?: The Rush for Energy Resources*, edited by Soren Scholvin and Georg Stuver. Ashgate Publishing Limited.

M'Bida, Aurelie, and Estelle Maussion. 2020. *DRC's Giant Inga III Dam: Spanish Firm ACS Throws in the Towel.* 24 January. https://www.theafricareport.com/22572/drcs-giant-inga-iii-dam-spanish-firm-acs-throws-in-the-towel/.

McGillivray, Fiona, and Alastair Smith. 1998. *Cooperating Democrats, Defecting Autocrats.* New Jersey: Annual Meeting of the Peace Science Society.

McGillivray, Fiona,, and A Smith. 2000. “Trust and Cooperation through Agent-Specific Punishments.” *International Organization* 54 (4): 809-824.

McKenna, A., ed. 2010. *The History of Southern Africa.* Britannica Educational Publishing.

Meneses, Maria P, Celso B Rosa, and Bruno S Martins. 2017. “Colonial Wars, Colonial Alliances: The Alcora Exercise in the Context of Southern Africa.” *Journal of Southern African Studies* 1-14.

Middlemas, Keith. 1975. *Cabora Bassa: Engineering and Politics in Southern Africa.* London: Weidenfeld and Nicolson.

Miller, Gary J. 2011. “Credible Commitment.” In *International Encyclopedia of Political Science*, by Bertrand Badie, Dirk Berg-Schlosser and Leonardo Morlino, 487-489. Thousand Oaks, CA: Sage Publications Inc.

Milliken, Jennifer. 1999. “The Study of Discourse in International Relations: A Critique of Research and Methods.” *European Journal of International Relations* 5 (2): 225-254.

Ministério Do Ultramar. 1969. “Cahora Bassa Project: Supply Contract between the Government of the Republic of Portugal and Electricity Supply Commission of the Republic of South Africa.” Imprensa Nacional de Lisboa.

Minter, William. 1972. *Portuguese Africa and the West.* New York and London: Monthly Review Press.

Misser, François. 2014. *Pas d'argent americain pour le barrage d'Inga.* 16 February. https://www.lalibre.be/planete/pas-d-argent-americain-pour-le-barrage-d-inga-5300ed583570c16bb1ce4be3.

Misser, Francois. 2018. *World's Biggest non-existent Dam gets bit bigger, bit further from existing.* Accessed 2018. http://africanarguments.org/2018/04/11/worlds-biggest-non-existent-dam-gets-bit-bigger-bit-further-from-existing-congo-grand-inga/ .

Mohamed, Hamza. 2018. *DRC's Kabila insists Vote will go Ahead on December 30.* New Report, Aljazeera. https://www.aljazeera.com/news/2018/12/drc-kabila-insists-vote-december-30-181227202042521.html.

Morrow, James D. 1997. "A Rational Choice Approach to International Conflict." In *Decision-making on War and Peace: The Cognitive-Rational Debate*, edited by Nehemia Geva and Alex Mintz. Boulder, and London: Lynne Rienner Publishers.

Mungói, Claudio A. 2011. "A Producao de Energia: Usos Politicos e Economicos do Território e Desenvolvimento Rural no Vale do Zambese, Mocambique - A Barragem de Cahora Bassa em Questao." *GEOUSP - Espaco e Tempo,* (29): 77-84.

Naidoo, M, M B Mbuere, G Keletsitse, J Ventura, and M Musanda. 2001. "The Western Power Corridor Project - the Planning for Largescale Hydro Electric Power Generation and Transmission across Southern Africa." IEEE.

Nee, Victor, and Paul Ingram. 1998. "Embeddedness and Beyond: Institutions, Exchange, and Social Structure." In *The New Institutionalism in Sociology*, edited by Mary C. Brinton and Victor Nee, 19-45. New York: Russel Sage Foundation.

Nevin, Tom. 2017. *Inga 3 Dam Delays a chance for DRC to weigh Options.* Accessed 2017. https://www.businesslive.co.za/bd/world/africa/2017-07-19-inga-3-dam-delays-a-chance-for-drc-to-weigh-options/.

Nguh, Augustin. 2016. "The Grand Inga Dam Scheme: Dreams and Nightmares for the Local Communities in the Democratic Republic of Congo and Africa as a Whole." Accessed 2017. https://choforche.wordpress.com/2016/09/14/the-grand-inga-dam-scheme-dreams-and-nightmares-for-the-local-communities-in-the-democratic-republic-of-congo-and-africa-as-a-whole-14-september-2016-by-augustin-nguh/.

Nichols, Gary. 2007. "Fluvial Systems in Desiccating Endorheic Basins." In *Sedimentary Processes, Environments and Basins: A Tribute to Peter Friend*, 569-589.

North, Douglass C. 1990. *Institutions, Institutional Change, and Economic Performance.* New York: Cambridge University Press.

North, Douglass C. 1993. "Institutions and Credible Commitment." *Journal of Institutional and Theoretica Economics (JITE) / Zeitschrift Fur Die Gesamte Staatswissenschaft* 149 (1): 11-23.

Nzongola-Ntalaja, Georges. 2002. *The Congo from Leopold to Kabila: A People's History.* London and New York: Zed Books.

O'Keefe, Phil, and Barry Munslow, . 1984. *Energy and Development in Southern Africa: SADCC Country Studies, Part II.* Vols. Energy, Environment and Development in Africa. 4 vols. Sweden: The Beijer Institute and the Scandinavian Institute of African Studies.

Olivier, Henry. 1975. *Damit.* Johannesburg: Macmillian.
—. 1976. *Great Dams in Southern Africa.* Cape Town: Purnell.
Organisation for Economic Co-operation and Development (OECD). 2003. *Export Credits.* Accessed 2017. https://stats.oecd.org/glossary/detail.asp?ID-909.
Orievulu, Kingsley Stephen. 2012. "Natural Resources and the Crisis of Nation-Building in Africa: The Case of Oil and Violence in the Niger Delta Region of Nigeria." Masters Research Report, University of the Witwatersrand. http://wiredspace.wits.ac.za/bitstream/handle/10539/11425/KINGSLEY%20RESEARCH%20REPORT29APRIL.pdf?sequence=3&isAllowed=y.
Oud, Englebertus, and Terence C Muir. 1997. "Engineering and Economic Aspects of Planning, Design, Construction and Operation of Large Dam Projects." *Large Dams: Learning from the Past, Looking at the Future.* IUCN, Gland, Switzerland and the World Bank Group, Washington DC. 17-40.
Oye, Kenneth. 1986. "Explaining Cooperation Under Anarchy: Hypotheses and Strategies." In *Cooperation Under Anarchy*, by Kenneth A Oye, 1-24. New Jersey: Princeton University Press.
Pappis, I., M Howells, V. Sridharan, W. Usher, A. Shivakumar, F. Gardumi, and E Ramos. 2019. *Energy Projections for African Countries.* JRC Technical Report, European Commission, Netherlands: European Union. https://publications.jrc.ec.europa.eu/repository/bitstream/JRC118432/jrc118432_jrc118432_reviewed_by_ipo.pdf.
Pearce, David G. 1992. "Repeated Games: Cooperation and Rationality." In *Advances in Economic Theory: Sixth World Congress*, by Jean-Jacques Laffont. Cambridge: Cambridge University Press.
Pellegrina, Lucia Dalla, Donato Masciandaro, and Rosaria Vega Pansini. 2011. "New Advantages of Tying One's Hands: Banking Supervision, Monetary Policy and Central Bank Independence." In *Handbook of Central Banking, Financial Regulation and Supervision: After the Financial Crisis*, by S Eijffinger and Donato Masciandaro. Edward Elga Publishing.
Pénard, Thierry. 2008. "Game Theory and Institutions." In *The New Institutional Economics*, by E. Brousseau and J Glachant. United Kingdom: Cambridge University Press.
Petrie, Belynda. 2019. *Financing Transboundary Water Investments - from Public Good to Shared Interest.* https://oneworldgroup.co.za/financing-transboundary-water-investments-from-public-good-to-shared-interest/.
Pindyck, Robert S. 1991. "Irreversibility, Uncertainty, and Investment." *Journal of Economic Literature* XXIX: 1110-1148.
Pokhrel, Y N, Taikan Oki, and S Kanae. 2008. "A Grid Based Assessment of Global Theoretical Hydropower Potential." *Annual Journal of Hydraulic Engineering (JSCE)* 52: 7-12.

Radmann, Wolf. 1974. “The Zambezi Development Scheme: Cahora Bassa.” *A Journal of Opinion* (Cambridge University Press) 4 (2): 47-54. http://www.jstor.org/stable/1166270.

Rånge, Max, and Mikael Sandberg. 2017. “Political Institutions and Regimes since 1600: A New Historical Data Set.” *Journal of Interdisciplinary History* XLVII (4): 495-520.

Rangeley, W.R. 1990. “The Large Dam Controversy.” *World Bank Technical Paper Number 115*. Edited by Guy Le Moigne, Shawki Barghouti and Herve Plusquellec. Washington, DC, Washington, DC: The World Bank, February.

Rao, Narasimha D. 2013. “Does (better) Electricity Supply Increase Household Enterprise Income in India.” *Energy Policy* 57: 532-541.

Rapaczynski, Andrzei. 1996. “The Roles of the State and the Market in Establishing Property Rights.” *Journal of Economic Perspectives* 10 (Spring): 87-103.

Reuters. 2017. *DRC Delays Inga 3 Hydro Project to 2024/2025*. Accessed 2017. https://www.cnbcafrica.com/news/2017/07/04/drc-delays-inga-3-hydro-project-202425/.

Robertson, Peter J., and Shui-Yan Tang. 1995. “The Role of Commitment in Collective Action: Comparing the Organizational Behavior and Rational Choice Perspectives.” *Public Administration Review* 55 (1): 67-80.

Ross, Michael. 1999. “The Political Economy of the Resource Curse.” *World Politics* 51 (2): 297-322.

Ruiters, Michelle, interview by Ekeminiabasi Eyita-Okon. 2016.

Ruiters, Michelle, interview by Ekeminiabasi Eyita-Okon. 2016. *Inga III and dam development challenges*

Ruiters, Michelle, interview by Ekeminiabasi Eyita-Okon. 2018. *The Inga III dam development*

Schelling, Thomas C. 2006. *Strategies of Commitment and Other Essays.* Cambridge, Massachusetts and London, England: Harvard University Press.

—. 1980. *The Strategy of Conflict.* Cambridge, Massachusetts and London, England: Harvard University Press.

Schreyögg, Georg, and Horst Steinmann. 1986. “Moral Issues in Business: The Case of Cahora Bassa.” *Scandinavian Journal of Management Studies.*

Sebastian, Antionette G, and Jeroen F Warner. 2013. “Geopolitical Drivers of Foreign Investment in African Land and Water Resources.” *African Identities* 12 (1): 8-25.

Seleti, Y N. 1990. “The Development of Dependent Capitalism in Portuguese Africa.” In *Studies in the Economic History of Southern Africa: the Front-Line States*, by Z A Konczacki, J L Parpart and T M Shaw. New York: Routledge.

Seleti, Y N. 1990. “The Development of Dependent Capitalism in Portuguese Africa.” In *Studies in the Economic History of Southern Africa: The Front-Line States*, by Z A Konczacki, J L Parpart and T M Shaw. New York: Routledge.

Sen, Amartya K. 1990. “Rational Fools: A Critique of the Behavioral Foundations of Economic Theory.” In *Beyond Self-Interest*, by Jane J. Mansbridge, 27-45. Chicago and London: The University of Chicago Press.

Shepsle, Kenneth. A. and Bonchek, Mark. S. 1997. *Analyzing Politics: Rationality, Behavior, and Institutions.* New York.: W. W. Norton & Company:.

Shoemaker, Bruce, and William Robichaud. 2018. “Nam Theun 2's Winding History: Studies, Setbacks, and Rebrandings.” In *Dead in the Water: Global Lessons from the World Bank's Model Hydropower Project in Laos*, edited by Bruce Shoemaker and William Robichaud, 15-42. Winsconsin: The University of Wisconsin Press.

Shore, Barry, and Benjamin J Cross. 2005. “Exploring the Role of National Culture in the Management of Large-scale International Science Projects.” *International Journal of Project Management* 23 (1): 55-64.

Showers, K B. 2009. “Congo River's Grand Inga Hydroelectricity Scheme: Linking Environmental History, Policy and Impact.” *Water History* 1: 38-58.

Simmons, Beth A., and Allison Danner. 2010. “Credible Commitments and the International Criminal Court.” *International Organization* 64 (2): 225-256.

Smith, Alan K. 1991. “The Idea of Mozambique and its Enemies, c. 1890-1930.” *Journal of Southern African Studies* 17 (3): 496-524. doi:10.1080/03057079108708289.

Snidal, Duncan. 2002. “Rational Choice and International Relations.” In *Handbook of International Relations*, edited by Walter Carlsnaes, Thomas Risse and Beth A. Simmons. London, Thousand Oaks, New Delhi: Sage Publications.

Sousa Cruz, António, Dina Guambe, Constantino Pedro Marrengula, and Amosse Francisco Ubisse. 2014. “Mozambique's Industrialization.” *Working Ppaper*. no. 2014/059. United Nations University - World Institute for Development Economics Research.

South African Government. 2013. *Working visit to the Democratic Republic of Congo, Lumbumbashi.* Accessed 2017. https://www.gov.za/working-visit-democratic-republic-congo-lumbumbashi.

Sovacool, Benjamin K, and Götz Walter. 2019. “Internationalizing the Political Economy of Hydroelectricity: Security, Development and Sustainability in Hydropower States.” *Review of International Political Economy* 26 (1): 49-79. doi:https://doi.org/10.1080/09692290.2018.151149.

Spiller, Pablo T. 1995-1995. “A Positive Political Theory of Regulatory Instruments: Contracts, Administrative Law, or Regulatory Specificity.” *Southern California Law Review* 69 (2).

Spiller, Pablo T, and Mariano Tommasi. 2005. “The Institutions of Regulation: An Application to Public Utilities.” In *Handbook of New Institutional Economics*, by C Menard and M M Shirley. Netherlands: Springer.

Stats SA. 2019. “Mid-year Population Estimates 2019.” Statistical Release P0302, Department of Statistics South Africa, 1-30.

Stone, Glyn A. 1975. “The Official British Attitude to Anglo-Portuguese Alliance, 1910-1945.” *Journal of Contemporary History* 10 (4): 729-746.

Takouleu, Jean M. 2020. *DRC: Why did ACS exit Completely from the Inga III Hydroelectric Project?*. 28 January 2020. https://www.afrik21.africa/en/drc-why-did-acs-exit-completely-from-the-inga-iii-hydroelectric-project/.

Taylor, Adam. 2017. *China Treats its Foreign Aid like a State Secret. New Research aims to Reveal it.* 11 October. https://www.washingtonpost.com/news/worldviews/wp/2017/10/11/china-treats-its-foreign-aid-like-a-state-secret-new-research-aims-to-reveal-it/.

The Department of Foreign Affairs, Pretoria. 1984. *The Cahora Bassa Agreement.* Contract, Doornfontein: Johannesburg: Perskor.

The World Bank. 2018. “Implementation Completion and Results Report (H909-ZR) on a Grant in the Amount of SDR 47.7 Million (US$64.5 Million Equivalent) to the Democratic Republic of Congo for a DRC Inga 3 and Mid-size Hydropower Development TA (P131027).” Energy and Extractives Global Practice: Africa Region. http://documents.worldbank.org/curated/en/266481521472063648/pdf/ICR0000432503142018.pdf.

Theron, Ashley. 2017. *Inga 3 Hydroelectric Project to Double in Size.* Accessed 2017. https://www.esi-africa.com/inga-3-hydro-project-double-size/. .

Thomashausen, André E. 1983. “Africa Focus: The National Resistance of Mozambique.” *Africa Insight* 13 (2): 125-129.

Trans-Africa Production (TAP), interview by Ekeminiabasi Eyita-Okon. 2016. *Inga III and credible commitment challenges*

Treisman, Daniel. 2000. “Decentralization and Inflation: Commitment, Collective Action, or Continuity?” *American Political Science Review* 94 (4): 837-857.

Turner, Thomas. 2007. *The Congo Wars: Conflict, Myth and Reality.* London/New York: Zed Books.

Ulasan, B. 2012. “Openness to International Trade and Economic Growth: A Cross-Country Empirical Investigation.” *Economics* (2012-25).

United Nations General Assembly. 1974. “Mozambique Liberation Front-Portugal: Agreement Concerning the Self-Determination and

Independence of Mozambique." *International Legal Materials* 1467-1471. www.jstor.org/stable/20691357.
United Nations Statistics Divsion. 2019. *Total Hydro Production.* http://data.un.org/Data.aspx?d=EDATA&f=cmID%3aEH.
United States Agency for International Development (USAID). 2015. "Affirmative Investigation for DRC-Inga 3-BC Hydropower Project." *United Nations Environmental Programme.* Accessed 2017. http://pdf.usaid.gov/pdf_docs/PBAAH812.pdf.
Vail, Leroy. 1982. "The Scramble for Southern Africa, 1877-1895: The Politics of Partition Reappraised by D. M. Schreuder." *The International Journal of African Historical Studies* 15 (3): 501-503.
Van Deuren, Pierre. 1928. *Aménagement du Bas-Congo: Projet du Colonel du Génie de Réserve.*
van Huyssteen, Arnold. 1997. *Eskom holds whip hand in tariff negotiations.* Accessed 2018. http://home.intekom.com/salbu/apollo/CoharaBassa.html.
van Lange, Paul A. M. 2000. "Beyond Self-interest: A Set of Propositions Relevant to Interpersonal Orientations." *European Review of Social Psychology* 11 (1): 297-331.
Venâcio, Moises, and Stephen Chan. 1996. "Portuguese Diplomacy in Southern Africa 1974-1994." *South African Institute of International Affairs (SAIIA).*
Warner, Jeroen, Sarunas Jomantas, Eliot Jones, Sazzad Ansari, and Lotje de Vries. 2019. "The Fantasy of the Grand Inga Hydroelectric Project on the River Congo." *Water* 11 (407): 1-14.
Wharton. 2016. *China's Investments in Africa: What's the Real Story?* Accessed 2017. http://knowledge.wharton.upenn.edu/article/chinas-investments-in-africa-whats-the-real-story/. .
Williamson, O E. 1991. "Comparative Economic Organization: The Analysis of Discrete Structural Alternatives." *Administrative Science Quarterly* 63: 269-296.
Williamson, O E. 1979. "Transaction-cost Economics: The Governance of Contractual Relations." *Journal of Law and Economics* 22: 233-261.
Williamson, O. E. 1975. *Markets and Hierarchies: Analysis and Anti-trust Implications: A Study in the Economics of Internal Organization.* New York: Free Press.
Williamson, O. E. 2000. "The New Institutional Economics: Taking Stock, Looking Ahead." *Journal of Economic Literature* 38: 595-613.
Wong, Alfred, Dean Tjosvold, and Zi-you Yu. 2005. "Organizational Partnerships in China: Self-interest, Goal Interdependence, and Opportunism." *Journal of Applied Psychology* 90 (4): 782-791.
World Bank. 2019. "Electrification Efforts in sub-Saharan Africa must Address Root Causes of Low Access."

https://www.worldbank.org/en/region/afr/publication/electricity-access-sub-saharan-africa.
World Bank. 1996. *Estimating Construction Costs and Schedules: Experience with Power Generation Projects in Developing Countries (No. WTP325).* Washington, DC: The World Bank.
—. 2014. "International Development Association Project Appraisal Document on a Proposed Grant in the amount of SDR47.7 Million (US$73.1 Million equivalent) to the Democratic Republic of Congo for an Inga 3 Basse Chute and Mid-size Hydropower Development Technical Assistance Project." Accessed 2017. http://documents.worldbank.org/curated/en/817971468245430631/pdf/774200REPLACEM0140Box382121B00OUO90.pdf.
—. 2013. "Project Information Document (PID): Appraisal Stage." Accessed 2017. http://documents.worldbank.org/curated/en/118431468007232527/pdf/RDPMP010PID010Appraisal0Stage0March013.pdf.
—. 2010. "The Potential of Regional Power Sector Integration: Cahora Bassa Generation Case Study." http://documents.worldbank.org/curated/en/151711468320667853/pdf/773070v30ESMAP0ora0Bassa0Generation.pdf.
—. 2019. *The World Bank in the DRC.* https://www.worldbank.org/en/country/drc/overview.
World Bank. 2013. *Turning the Lights on Across Africa: An Action Agenda for Transformation.* Washington, DC: The World Bank. http://documents.worldbank.org/curated/en/712791468194329656/pdf/769910WP0SDS0Energy0Box374393B00PUBLIC0.pdf.
—. 2018. *What we Do.* Accessed 2018. http://www.worldbank.org/en/about/what-we-do.
World Bank. 2016. *World Bank Group Suspends Financing to the Inga-3 Basse Chute Technical Assistance Project.* http://www.worldbank.org/en/news/press-release/2016/07/25/world-bank-group-suspends-financing-to-the-inga-3-basse-chute-technical-assistance-project.
World Commission on Dams. 2000. "Cross-check Survey: Final Report." Cape Town, South Africa.
World Commission on Dams. 2000. *Dams and Development: A New Framework for Decision-Making.* London and Sterling, VA: Earthscan Publications Ltd.
World Council of Churches. 1971. "Cahora Bassa and the struggle for Southern Africa." London: Hatfield Group Printers Ltd. 1-41.
Worm, Janette, Jan Maarten Dros, and Jan Willem van Gelder. 2003. *Policies and Practices of Financing Large Dams.* WWF International.

Wu, Junhui, Daniel Balliet, and Paul A. M. Van Lange. 2016. “Reputation, Gossip, and Human Cooperation.” *Social and Personality Psychology Compass* 10 (6): 350-364.

Xiong, Yi. 2014. “The Role of Megaprojects and Their Relationship to Jobs and Growth.” In *Mozambique Rising: Building a New Tomorrow*, edited by Doris C. Ross, 26-36. Washington D.C.: International Monetary Fund.

Yin, R. K. 1984. *Case Study Research: Design and Methods.* Beverly Hills, Calif: Sage Publications.

Yusoff, Kathryn, and Jennifer Gabrys. 2011. “Climate Change and the Imagination.” *Wiley Interdisciplinary Reviews: Climate Change* 2 (4): 516-534.

Zhou, Y, M Hejazi, S Smith, J Edmonds, H Li, L Clarke, K Calvin, and A Thomson. 2015. “A Comprehensive View of Global Potential for Hydro-generated Electricity.” *Energy & Environmental Science* 1-13.